

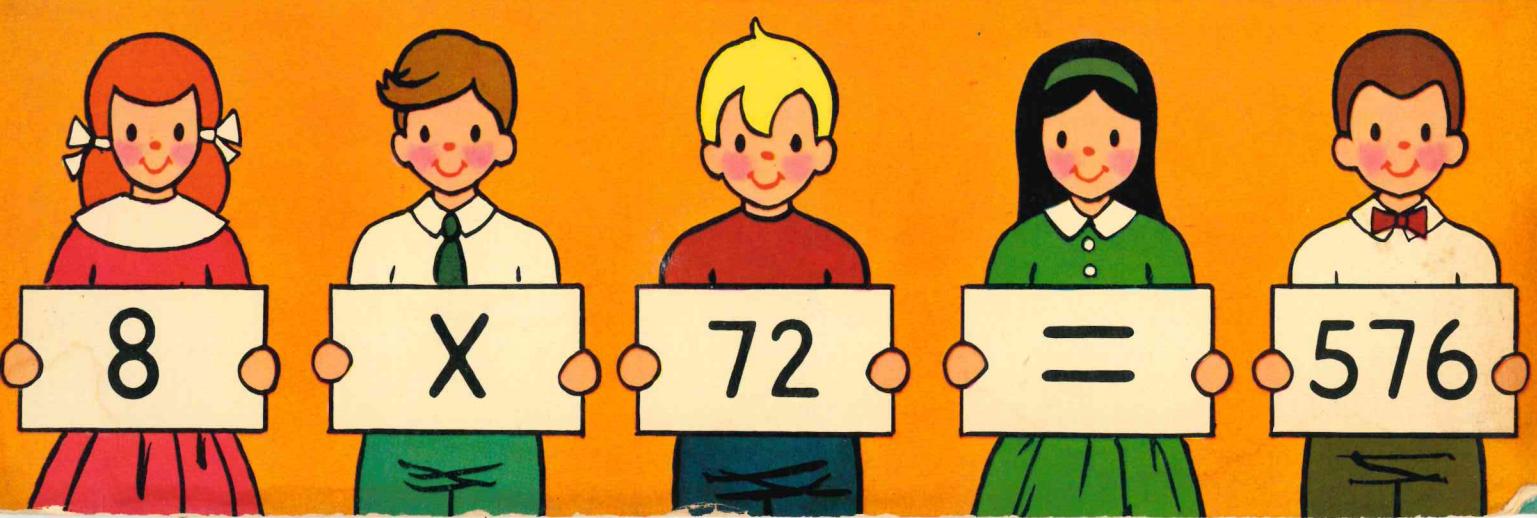
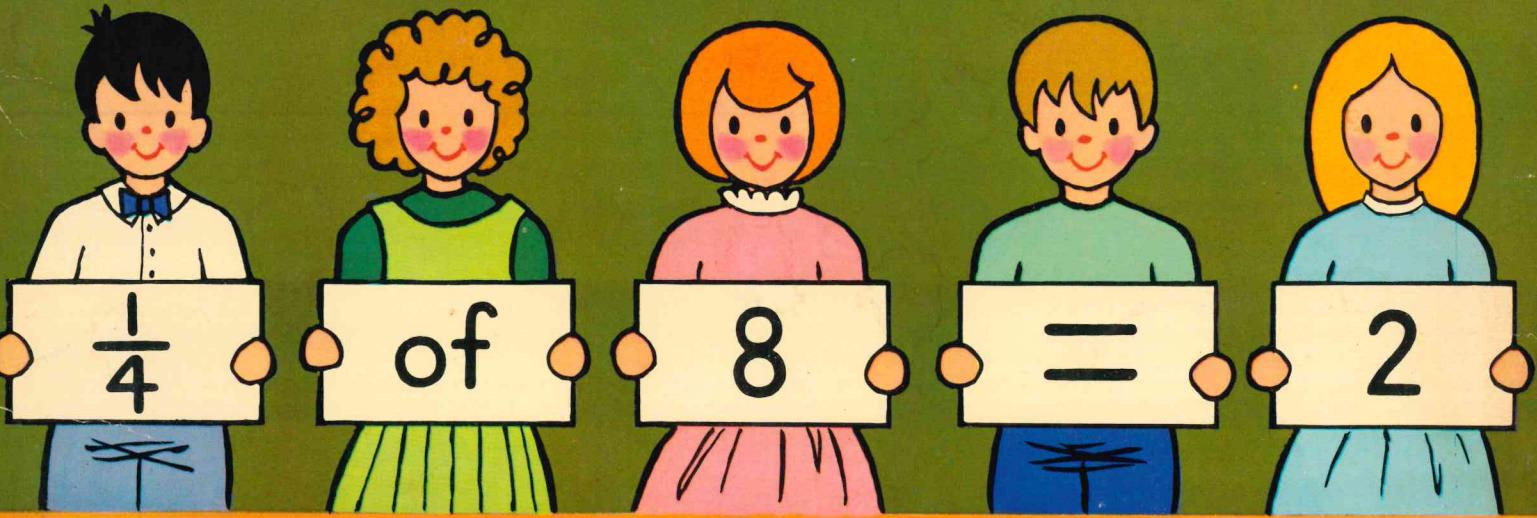
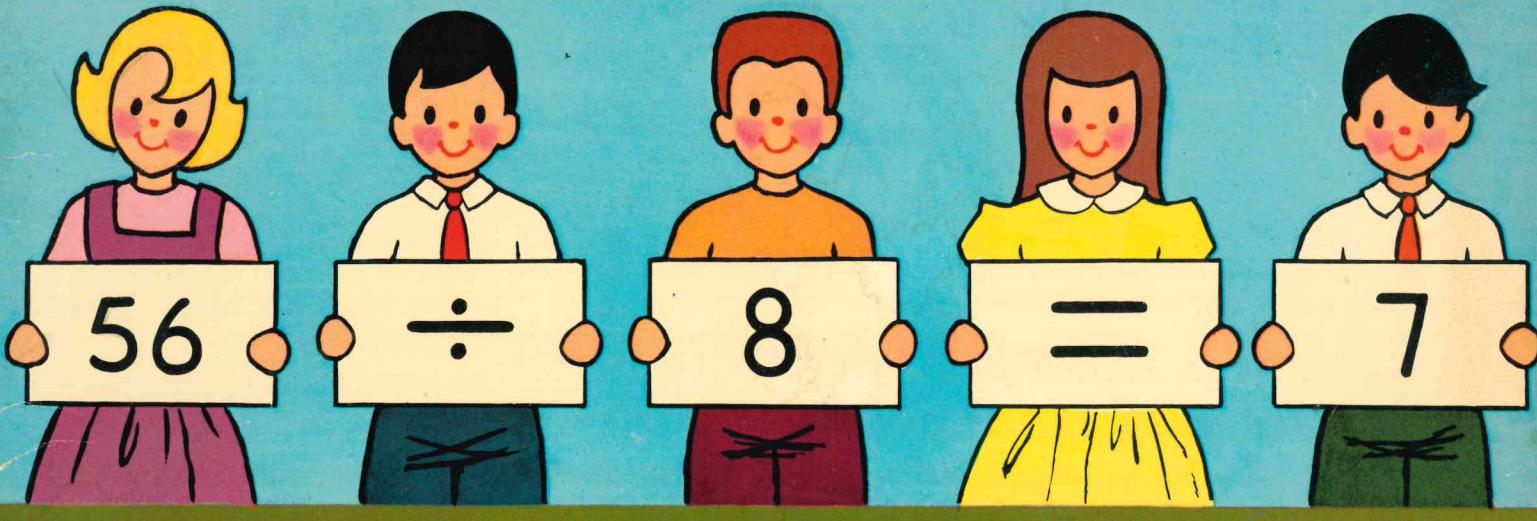


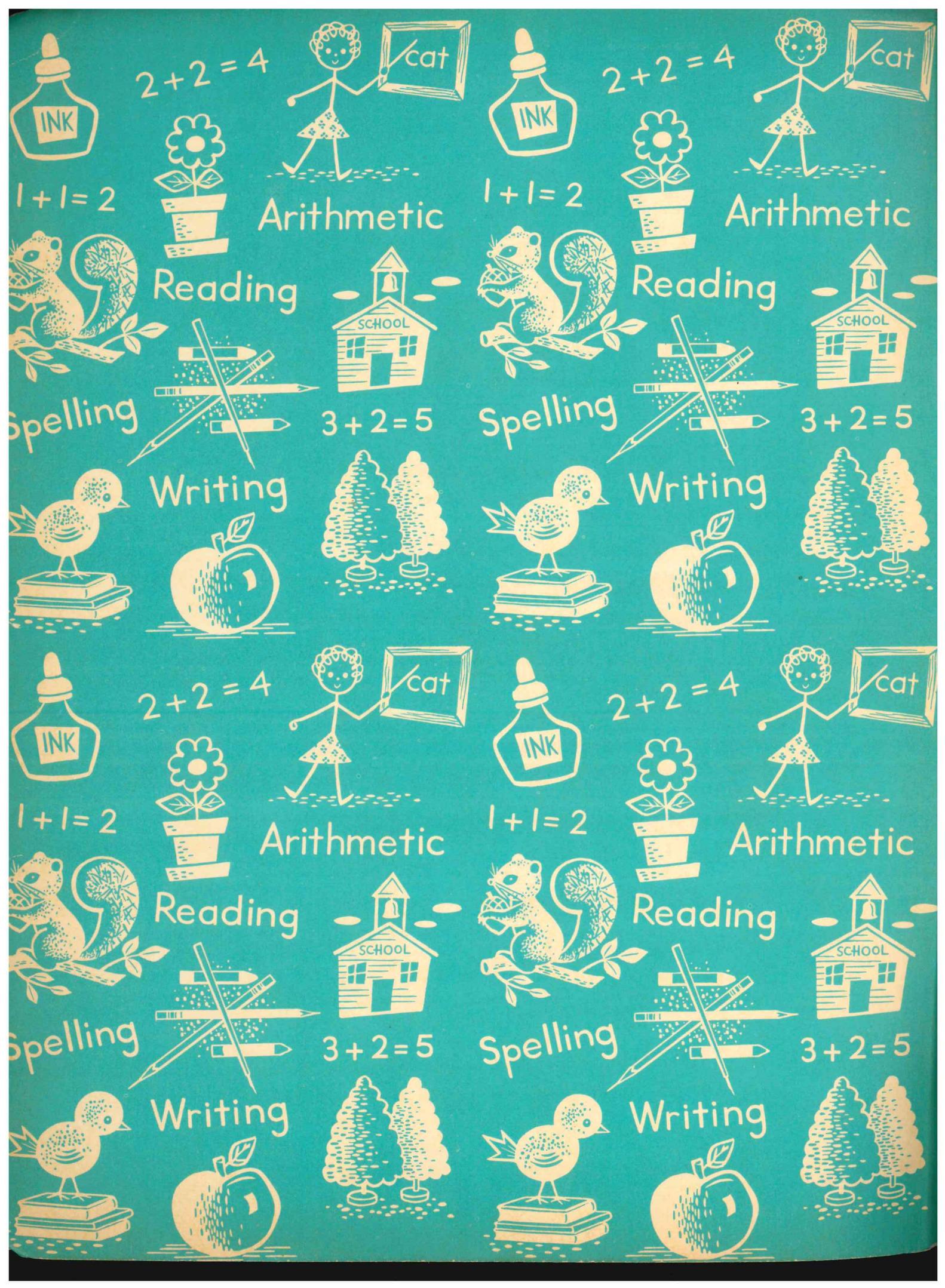
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The Practice Workbook of ARITHMETIC





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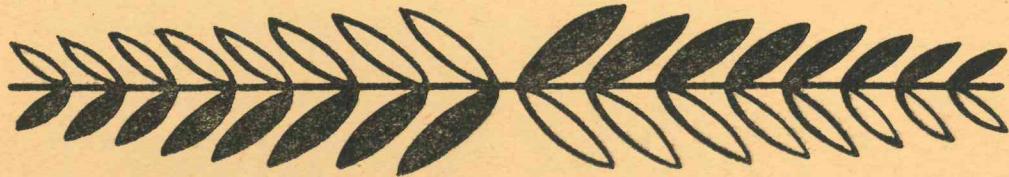
The Practice Workbook of **ARITHMETIC**

Prepared by an expert group of teachers
associated with outstanding textbook publishers.



Published by **TREASURE BOOKS, Inc.**
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Judie Holbrook



Note to Parents and Teachers

This workbook is designed for use in the fifth grade. The topics included are in agreement with recent arithmetic texts. It is planned to supplement any regular text with graded practice material, which may be easily found and scored.

The unit plan of organization is used. There are five units, each dealing with an important part of the year's work. Each unit begins with a review of previous related material and proceeds to the new and more difficult work. There is a unit test at the end of each unit which provides an individual check on the topic of the unit.

Special features

1. Each new process is carefully explained and illustrated at the top of the page.
2. The topics and practice material are placed in logical order with all new terms defined and explained.
3. The vocabulary is selected to grade level.
4. A review and maintenance program is provided throughout the book.
5. A continuous effort is made to present number relations, meanings, and applications in interesting experiences.
6. This workbook is planned to supplement the textbook and teacher in making arithmetic meaningful, and in providing ample practice material in interesting experiences.



UNIT 1. DO YOU REMEMBER?



One of 198,225 new homes

Do You Know What Numbers Mean?

Tom had fun during the summer watching the men build their new home. He read in the paper that 198,225 new homes had been built in the United States during the past year. He asked his teacher to help him read that number.

The teacher wrote it on the board like this:

Thousands	Units
198	225

Tom then read it "198 thousand 225."

Write the following numbers in figures and place commas between the units and thousands. Remember there are three figures in the units period.

1. 5 thousand 4 hundred 59
2. 10 thousand 7 hundred 47
3. 124 thousand 9 hundred 4
4. Thirty thousand five hundred four
5. One hundred four thousand sixteen

1. 5,459
2. 10,747
3. 124,904
4. 30,504
5. 104,016

In our Arabic number system each figure has a place which gives the number its value.

In the number 6,872, the 6 has a value of 6,000, the 8 has a value of 800, the 7 has a value of 70, and the 2 has a value of 2.

6,000
800
70
2
6,872

6. In the number 8,621 what is the value of 2?
7. In the number 17,482 what is the value of 4?
8. In the number 9,860 what is the value of 9?
9. In the number 168,464 what is the value of 1?
10. In the number 16,178 what is the value of 8?

20's
100's
1,000's
10,000's
1's

Helping on the Farm

1. One day last spring Mr. Brown bought a farm. He planted 10 acres in corn, 37 acres in wheat, and 18 acres in oats. How many acres of grain did he plant in all? 65

$$\begin{array}{r}
 10 \\
 37 \\
 +18 \\
 \hline
 65
 \end{array}$$

2. During the summer the Brown children picked strawberries. One day Susan picked 8 quarts, Mary picked 7, John picked 11, Tom 10, and Harry 9. How many quarts did they pick in all? 45

$$\begin{array}{r}
 8 \\
 7 \\
 11 \\
 10 \\
 9 \\
 \hline
 45
 \end{array}$$

3. John gathered the eggs for a week. On Monday he brought in 13; on Tuesday, 17; on Wednesday, 14; on Thursday, 17; on Friday, 16; on Saturday, 15; and on Sunday, 16. How many eggs did he gather that week? 13 + 17 + 14 + 17 + 16 + 15 + 16 = 112

4. That same week Harry had to weed the vegetable garden. How many hours did he work if he spent 3 hours Tuesday morning, 4 hours Thursday morning, 2 hours Friday morning, and 6 hours on Saturday? 15

5. One Saturday it rained and the boys went fishing. Harry caught 20 perch, Tom caught 19, and Frank 23. How many perch in all did they catch? 62

6. Mr. Brown needed a new plow and a harrow. How much did he pay if the plow cost \$36.85 and the harrow \$29.85? 66.70

7. Mrs. Brown kept this chart of the number of dozens of eggs she sold for 4 weeks. Find how many dozens of eggs she sold each week and how many she sold in all.

Week	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
1st	2	3	1	0	4	5	
2nd	3	2	4	3	2	4	
3d	6	3	1	2	0	3	
4th	1	6	2	1	5	4	

Number of dozens sold in all 28

Are You Sure of Addition?

Write the sums.

1.	a 6 8	b 7 6	c 9 7	d 8 7	e 9 8	f 0 7	g 8 6	h 9 4	i 8 5	j 6 9
----	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

2.	7 5	7 9	4 8	5 9	8 9	9 0	9 6	5 6	5 8	7 8
----	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3.	3 Think 4 7 2 9 9 18	8 0 1 8	5 3 9 2	4 0 1 9	6 8 0 3	1 4 6 7	8 2 7 3	5 4 6 7	9 8 2 0
----	-------------------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------

Do you remember about carrying?

4.	a 2 3 6 9	b 4 5 2 8	c 3 7 5 9	d 5 8 2 6	e 2 9 5 4	f 4 5 3 9	g 8 7 9 6	h 8 6 8 9
----	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

5.	3 6 3 8 9 2	8 7 5 6 6 4	9 5 2 8 7 5	4 2 0 9 1 3 8 7 9	3 0 6 5 5 5 4 4 0	7 2 8 6 0 7 1 9 4	8 5 5 3 5 6 4 7 9	9 4 6 7 0 0 2 9 8
----	-------------------	-------------------	-------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------

6. Adding money. Remember the \$ sign and the cents point.

a \$4.8 5	b \$6.7 3	c \$6.9 3	d \$4 0.7 5	e \$ 9.1 4	f \$4.6 2	g \$ 8 6.7 5
1.5 6	.6 2	5.4 0	3.9 8	2 0.4 6	5.0 0	3 4 5.6 5
3.0 4	1.0 6	8.5 8	1 2.6 0	5.3 8	.9 5	4 8 7.3 8
5.0 0	.3 9	3.7 4	5 4.2 0	7 4.7 5	6.8 8	5 9 3.2 0

Adding by endings. Write the sums quickly.

7.	a 2 + 6 = _____	b 12 + 6 = _____	c 32 + 6 = _____	d 72 + 6 = _____
8.	3 + 9 = _____	23 + 9 = _____	53 + 9 = _____	83 + 9 = _____
9.	9 + 7 = _____	39 + 7 = _____	49 + 7 = _____	69 + 7 = _____
10.	5 + 6 = _____	15 + 6 = _____	35 + 6 = _____	75 + 6 = _____



1. Gene and Mary Scott went with their father to visit New York City. One day they saw the ocean liner, the *Queen Mary*. They found that it was 1018 feet long. How much longer is the *Queen Mary* than Columbus' *Santa Maria* which was only 80 feet long? _____

2. Gene was interested in the tall buildings. He went to the top of both the Empire State Building and the Singer Building. If the Empire State is 102 stories high and the Singer 47 stories, which is higher? How many stories higher?

3. What is the difference in length between the Holland Tunnel, which is 9,250 feet long, and the Lincoln Tunnel, which is 8,000 feet long? _____

4. When Mary visited the Bronx Zoo on Tuesday, 7,650 people were there, and when Gene went on Saturday, there were 9,463 people. Which day had more visitors? How many more?

5. Mary bought her mother a gift. If the candy cost \$2.25, how much change did she get back from \$5.00? _____

6. Gene spent \$8.75 while visiting in New York, and Mary spent \$9.25. Who spent more? How much more? _____,

7. If Gene is 4 feet 6 inches tall and Mary is 3 feet 8 inches, who is taller? How much taller? _____, _____

8. The cost of the trip to the city was \$97.75. Going home it was \$103.90. Which way cost more? How much more?

Score _____ (60)

Are You Sure of Subtraction?

Write the remainders.

1. a b c d e f g h i j
1 5 1 4 1 6 1 3 1 2 1 8 1 1 9 1 4 1 7
6 7 8 9 7 9 6 0 8 9
— — — — — — — — — —

2. a b c d e f g h i j
1 3 1 5 1 3 1 2 1 1 1 7 1 5 1 4 1 3 1 6
4 9 8 8 4 8 7 5 6 9
— — — — — — — — — —

3. a b c d e f g h i j
1 2 1 2 1 4 1 5 1 3 1 2 1 3 1 2 1 4 1 6
9 4 9 8 7 5 5 3 6 7
— — — — — — — — — —

Do you remember borrowing?

4. a b c d e f g h i j
7 1 Think 6 1 1 8 0 9 2 9 0 9 6 9 0 8 1 7 8
4 9 4 9 4 1 3 6 1 4 6 7 5 7 2 8 2 9
— — — — — — — — — —

5. a b c d e f g h i j
8 1 9 7 0 7 9 0 0 9 1 9 7 0 6 6 1 9 7 0 8 1 0 9 8 0 7
2 6 1 3 0 2 5 0 4 7 9 6 6 1 3 3 1 2 7 5 7 5 8 3
— — — — — — — — — —

Subtracting money. Remember the \$ sign and the cents point.

6. a b c d e f g h i
\$9.3 5 \$5.9 0 \$4.7 2 \$8.5 5 \$6.5 1 \$5.0 0 \$3.0 0 \$1 0.0 0
8.0 2 .8 9 3.9 0 6.7 5 3.9 0 4.2 6 2.1 5 7.6 7
— — — — — — — — —

Copy and subtract.

7. \$3.25 from \$5.00 9. \$.75 from \$4.50 11. \$8.36 from \$10.00
8. \$3.86 from \$4.75 10. \$1.38 from \$2.00 12. \$.92 from \$ 6.40

Do You Know When to Add and When to Subtract?

1. There are 16 girls and 17 boys in the fifth grade. How many pupils are there all together? _____

2. John cut 9 inches from a board that was thirty inches long. How long was the remaining board? _____

3. David had 125 stamps. He gave 74 to the Percy Jones Hospital. How many has he left? _____

4. Tom had 26 marbles and Harry had 78. How many more marbles did Harry have? _____

5. Mary has 10 roses, Sara has 7, and Joyce has 13. How many do they have together? _____

6. Peter's geography book costs \$1.45 and his history \$1.35. How much must he pay for both? _____

7. John's books cost him \$3.75. How much change did he get from \$5.00? _____

8. What is the difference between a foot and 15 inches?

9. What is the sum of 94, 47, 83, and 126? _____

10. Pike's Peak is 14,110 feet high and Mt. McKinley is 20,300 feet high. Which is higher? How much?

Fill each blank with "add" or "subtract."

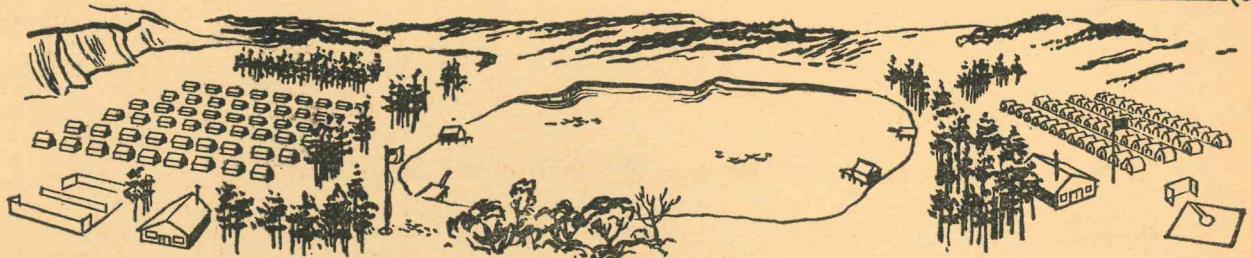
11. To find the sum we _____.

12. To find the difference we _____.

13. To find how many in all we _____.

14. To find the total we _____.

15. To find the remainder we _____.



Camping

1. Many fifth graders spend part of their summers at camp. Gordon and several of his friends went to Camp Rotary. The cost per week there was \$14.50. How much money did Gordon's father pay if Gordon stayed three weeks? _____
2. Sally and her friends went to Camp Greenwood. If there were 6 rows of cabins and 9 cabins in each row, how many cabins were in Sally's group? _____
3. Sally stayed four weeks. How much did it cost her parents if she had to pay \$15.50 per week? _____
4. There were 9 boys in Tom's group. One day he bought each boy a \$.12 candy bar. How much money did he need?

5. In the boys' mess hall there were 25 tables. Six persons could sit at each table. If all the seats were full, how many people would there be in all? _____
6. In the girls' dining hall there were 20 tables. If five persons could sit at each table, how many campers could eat at the same time? _____
7. Henry's tent was beyond the pine grove. There were 4 rows of tents and 14 in each row. How many tents in all? _____
8. One day the boys painted the oars for the large boats. If there were 12 boats and each boat had 4 oars, how many oars did the boys paint? _____
9. Sally took her friends for a boat ride. She bought 9 tickets for \$.35 each. How much did the tickets cost her? _____

Score _____ (36)

Are You Sure of Multiplication?

Write the products.

	a	b	c	d	e	f	g	h	i	j
1.	8	7	6	5	7	8	9	7	4	9
	4	5	7	9	6	0	9	2	8	4
	<hr/>									
2.	8	8	7	7	9	8	9	6	7	9
	6	7	9	3	6	8	7	5	8	8
	<hr/>									

In multiplication you will need facts like:

 $6 \times 8 + 2 = 50$ Think, 6 times 8 are 48 and 2 are 50.

Write the answers.

	a	b	c	d
3.	$7 \times 4 + 5 =$ _____	$4 \times 6 + 2 =$ _____	$9 \times 7 + 3 =$ _____	$7 \times 6 + 2 =$ _____
4.	$7 \times 8 + 2 =$ _____	$8 \times 4 + 7 =$ _____	$9 \times 9 + 3 =$ _____	$3 \times 6 + 2 =$ _____
5.	$6 \times 4 + 2 =$ _____	$8 \times 0 + 5 =$ _____	$6 \times 8 + 3 =$ _____	$8 \times 9 + 5 =$ _____
6.	$4 \times 7 + 3 =$ _____	$9 \times 8 + 0 =$ _____	$9 \times 2 + 8 =$ _____	$5 \times 7 + 3 =$ _____
	<hr/>	<hr/>	<hr/>	<hr/>

Multiply 684 by 6.

Score _____ (24)

Think 6 times 4 = 24. Write 4 and carry 2.

684 multiplicand

Think 6 times 8 + 2 = 50. Write 0 and carry 5.

6 multiplier

Think 6 times 6 + 5 = 41. Write 41.

4104 product

Write the products.

	a	b	c	d	e	f	g	h
1.	6 8	3 7	5 4	3 4	5 6	4 5	4 9	2 3
	9	7	6	9	8	7	5	8
	<hr/>							
2.	4 6 8	8 5 3	7 6 4	9 8 6	6 3 2	5 3 2	5 3 4	9 8 7
	3	5	4	2	6	4	2	8
	<hr/>							

Watch the zeros.

3.	6 0	9 0	7 0	8 0 4	3 0 9	3 0 9	9 0 0	9 0 5
	9	4	7	6	7	9	6	8
	<hr/>							



Score _____ (7)

Picnicking

1. Bruce's class is planning a picnic. Bruce is one of the boys bringing apples. If apples cost 5 cents each, how many can he bring for \$.40? _____
2. John wants to bring some pears. How many can he buy for \$.40 if they cost 8 cents each? _____
3. The class voted to have milk. How many quarts will be needed for 1 glass each for 36 pupils if one quart makes 4 glasses? _____
4. Six boys brought the doughnuts. The cost was \$1.02. How much did each boy pay? _____
5. A group of 7 girls brought bananas. How much did each pay if the cost was \$3.15? _____
6. Since there are 9 players to a baseball team, how many teams can be formed in this class of 36?

7. They went boating in the afternoon. If each boat holds six children, how many boats are needed for the 36 boys and girls? _____

Score _____ (32)

How Well Do You Know the Division Facts?

Write the quotients.

a

b

c

d

e

3 quotient
divisor 6)18 dividend
g h

1. $6)4\bar{2}$ $9)2\bar{7}$ $6)3\bar{0}$ $3)2\bar{7}$ $7)0$ $8)5\bar{6}$ $9)4\bar{5}$ $8)7\bar{2}$
2. $9)6\bar{3}$ $7)3\bar{5}$ $6)5\bar{4}$ $7)2\bar{8}$ $6)6$ $8)3\bar{2}$ $4)3\bar{6}$ $6)1\bar{2}$
3. $8)4\bar{8}$ $7)4\bar{2}$ $8)4\bar{0}$ $7)5\bar{6}$ $5)4\bar{5}$ $4)3\bar{2}$ $7)4\bar{9}$ $9)8\bar{1}$
4. $6)4\bar{8}$ $9)7\bar{2}$ $8)6\bar{4}$ $7)6\bar{3}$ $9)5\bar{4}$ $1)0$ $9)9$ $9)1\bar{8}$

Are You Sure of Division?

Write the quotients.

a

b

c

d

e

f

1.
$$\begin{array}{r} 2 \ 1 \ 3 \\ 2)4 \ 2 \ 6 \end{array}$$

$$3)6 \ 9 \ 3$$

$$4)8 \ 4 \ 8$$

$$3)3 \ 6 \ 6$$

$$2)8 \ 6 \ 2$$

$$6)6 \ 6 \ 6$$

2.
$$\begin{array}{r} 3 \ 1 \\ 4)1 \ 2 \ 4 \end{array}$$

$$5)1 \ 5 \ 5$$

$$3)2 \ 7 \ 6$$

$$9)3 \ 6 \ 9$$

$$7)5 \ 6 \ 7$$

$$4)1 \ 6 \ 8$$

3.
$$\begin{array}{r} 1 \ 4 \ 9 \\ 6)8 \ 9 \ 4 \\ \hline 6 \\ \hline 2 \ 9 \\ 2 \ 4 \\ \hline 5 \ 4 \\ \hline 5 \ 4 \end{array}$$

$$3)5 \ 2 \ 2$$

$$5)6 \ 7 \ 5$$

$$7)9 \ 6 \ 6$$

$$4)9 \ 4 \ 4$$

$$8)9 \ 9 \ 2$$

4.
$$7)2 \ 9 \ 7 \ 5$$

$$8)3 \ 7 \ 8 \ 4$$

$$6)3 \ 9 \ 4 \ 2$$

$$4)3 \ 7 \ 4 \ 8$$

$$9)4 \ 6 \ 4 \ 4$$

$$5)2 \ 6 \ 7 \ 5$$

5. Watch the zeros.

$$\begin{array}{r} 6 \ 5 \ 0 \\ 5)3 \ 2 \ 5 \ 0 \\ \hline 3 \ 0 \\ \hline 2 \ 5 \\ 2 \ 5 \\ \hline 0 \end{array}$$

$$7)2 \ 0 \ 3 \ 0$$

$$8)2 \ 0 \ 0 \ 0$$

$$4)1 \ 6 \ 8 \ 0$$

$$6)2 \ 1 \ 0 \ 0$$

$$9)3 \ 8 \ 7 \ 0$$

6.
$$8)6 \ 4 \ 1 \ 6$$

$$7)4 \ 2 \ 4 \ 9$$

$$9)4 \ 5 \ 0 \ 9$$

$$6)5 \ 4 \ 3 \ 6$$

$$9)7 \ 2 \ 0 \ 9$$

$$8)6 \ 4 \ 5 \ 6$$

Can You Divide When There Is a Remainder?

1. divisor 5)41 quotient
dividend
40
1 remainder

2. 22 R 2
7)156
14
16
14
2

Check
22
7
154
2
156

To check, see example 2 above. You multiply the quotient 22 by the divisor 7 and add the remainder 2 to this product. The result 156 checks since it equals the dividend.

Divide and check.

a
1. 6)4 9 7

b
3)1 3 1 0

c
4)1 7 1 7

2. 7)4 0 0 7

6)1 3 5 1

8)1 4 7 1

3. 9)8 9 9 0

5)2 4 1 8

2)3 2 7 3

Do You Multiply or Divide?

1. How much will three tablets cost, if
one costs \$17? _____

2. How many sandwiches will be needed
for 35 children if each eats two? _____

3. How many three-cent stamps can
Mary buy with her \$.36? _____

4. How many books are needed to fill five
shelves if there are forty books to a shelf?

5. How many feet are there in 36 inches?

6. How many weeks are there in 56 days?

7. A ticket to the show costs John \$.15.
How much will it cost him to go 9 times?

8. Some meats cost \$.45 a pound. How
much will I have to pay for 6 pounds?

9. The Mann School has 328 pupils. If pu-
pils march in rows of four, how many rows
will there be? _____

10. Into how many rows will 49 children
be arranged if there are 7 children in each
row? _____

11. If canvas sells for \$.34 a yard, how
much will $\frac{1}{2}$ a yard cost? _____

12. If Frank collects 39 eggs every day
from his chickens, how many will he have to
sell at the end of a week? _____

13. Frank sold 8 dozen eggs for \$.65 a
dozen. How much did he get for them?

Unit Test 1

1. Write in figures and place the commas correctly:

Two hundred one thousand six hundred two. _____

2. Write in words:

345,060 _____

3. Harry paid \$4.00 for a baseball mitt, \$2.50 for a bat, and \$1.25 for a ball. How much did he pay for all?

4. Charles weighs 86 pounds and his brother Bill weighs 79 pounds. How much more does Charles weigh? _____

5. At 9 cents each, how much will 25 cans of soup cost? _____

6. Tom paid 72 cents for eight apples. How much did one cost? _____

7. How much will $\frac{1}{2}$ yard of cloth cost if a whole yard costs \$.98? _____

8. Add.

$$\begin{array}{r} 3 \ 6 \\ 2 \ 1 \\ 4 \ 8 \\ \hline 7 \ 3 \end{array}$$

9. Add.

$$\begin{array}{r} 7 \ 4 \ 3 \\ 8 \ 6 \ 7 \\ \hline 3 \ 9 \ 5 \end{array}$$

10. Add.

$$\begin{array}{r} \$ \ 9.1 \ 3 \\ 2 \ 4.6 \ 4 \\ \hline 1 \ 8.3 \ 9 \end{array}$$

11. Subtract.

$$\begin{array}{r} 9 \ 5 \\ 7 \ 3 \\ \hline \end{array}$$

12. Subtract.

$$\begin{array}{r} 8 \ 4 \ 3 \\ 3 \ 6 \ 9 \\ \hline \end{array}$$

13. Subtract.

$$\begin{array}{r} 7 \ 0 \ 1 \\ 5 \ 6 \ 4 \\ \hline \end{array}$$

14. Subtract.

$$\begin{array}{r} 7 \ 0 \ 1 \ 0 \\ 5 \ 3 \ 9 \\ \hline \end{array}$$

15. Multiply.

$$\begin{array}{r} 4 \ 3 \\ \times \ 7 \\ \hline \end{array}$$

16. Multiply.

$$\begin{array}{r} 2 \ 4 \ 3 \\ \times \ 6 \\ \hline \end{array}$$

17. Multiply.

$$\begin{array}{r} 7 \ 0 \ 8 \\ \times \ 9 \\ \hline \end{array}$$

18. Divide.

$$4) \overline{9 \ 8}$$

19. Divide.

$$7) \overline{4 \ 9 \ 5 \ 6}$$

20. Divide.

$$8) \overline{1 \ 8 \ 4 \ 0}$$

UNIT 2. LEARNING MORE ABOUT DIVISION

Score _____ (35)



Dividing by a Two-Figure Number

Mary has 60¢ to buy Christmas cards. How many 10¢ cards can she buy?

Mary thinks, 10 is 1 ten and 60 is 6 tens, so $6 \div 1 = 6$. She writes 6 in the quotient over the 0. She multiplies $6 \times 10 = 60$. There is no remainder. She can buy 6 Christmas cards.

$$\begin{array}{r} 6 \\ 10 \overline{) 60} \\ \underline{60} \end{array}$$

The fifth grade is planning a picnic. They plan to have 96 sandwiches for 32 children. How many will this be for each child?

$$\begin{array}{r} 3 \\ 32 \overline{) 96} \\ \underline{96} \end{array}$$

To find the quotient figure, think how many times the first figure in the divisor will go in the first figure in the dividend. $9 \div 3 = 3$. Write 3 in the quotient over the 6. $3 \times 32 = 96$. Each child will have 3 sandwiches.

Divide.

a

b

c

d

e

f

g

1. $10 \overline{) 3 \ 0}$ $20 \overline{) 4 \ 0}$ $10 \overline{) 6 \ 0}$ $20 \overline{) 6 \ 0}$ $41 \overline{) 8 \ 2}$ $23 \overline{) 6 \ 9}$ $12 \overline{) 2 \ 4}$

2. $31 \overline{) 9 \ 3}$ $11 \overline{) 7 \ 7}$ $21 \overline{) 4 \ 2}$ $30 \overline{) 6 \ 0}$ $40 \overline{) 8 \ 0}$ $23 \overline{) 6 \ 9}$ $11 \overline{) 9 \ 9}$

3. $10 \overline{) 8 \ 0}$ $24 \overline{) 4 \ 8}$ $42 \overline{) 8 \ 4}$ $32 \overline{) 9 \ 6}$ $32 \overline{) 6 \ 4}$ $33 \overline{) 9 \ 9}$ $10 \overline{) 5 \ 0}$

4. $22 \overline{) 6 \ 6}$ $44 \overline{) 8 \ 8}$ $23 \overline{) 4 \ 6}$ $13 \overline{) 3 \ 9}$ $33 \overline{) 6 \ 6}$ $22 \overline{) 4 \ 4}$ $10 \overline{) 9 \ 0}$

5. $21 \overline{) 6 \ 3}$ $31 \overline{) 6 \ 2}$ $20 \overline{) 8 \ 0}$ $11 \overline{) 8 \ 8}$ $43 \overline{) 8 \ 6}$ $22 \overline{) 8 \ 8}$ $84 \overline{) 6 \ 8}$



Dividing by a Two-Figure Number

Tom bought 72 new stamps for his stamp book. He can put 24 stamps on a page. How many pages will he use?

Think $7 \div 2 = 3$ and a remainder. 3 is the trial divisor. Write 3 in the quotient above the 2. $3 \times 24 = 72$. There is no remainder.

$$\begin{array}{r} 3 \\ 24 \overline{)72} \\ \underline{72} \end{array}$$

Divide 192 by 32.

Since the first figure in the dividend is too small to be divided by the 3 of the divisor, we use the first two figures of the dividend, or 19.

Think $19 \div 3 = 6$ and a remainder. 6 is the trial divisor. Write 6 in the quotient above the 9. $6 \times 32 = 192$. There is no remainder.

$$\begin{array}{r} 6 \\ 32 \overline{)192} \\ \underline{192} \end{array}$$

Divide.

a

b

c

d

e

f

1. $23 \overline{)92}$ $22 \overline{)132}$ $23 \overline{)115}$ $22 \overline{)154}$ $32 \overline{)192}$ $33 \overline{)132}$

2. $33 \overline{)165}$ $32 \overline{)256}$ $33 \overline{)264}$ $22 \overline{)176}$ $33 \overline{)297}$ $63 \overline{)378}$

3. $22 \overline{)198}$ $33 \overline{)231}$ $32 \overline{)288}$ $42 \overline{)252}$ $42 \overline{)336}$ $23 \overline{)138}$

4. $52 \overline{)312}$ $53 \overline{)477}$ $53 \overline{)318}$ $62 \overline{)496}$ $52 \overline{)364}$ $53 \overline{)424}$

5. $62 \overline{)434}$ $52 \overline{)468}$ $53 \overline{)371}$ $52 \overline{)416}$ $62 \overline{)372}$ $53 \overline{)265}$

Two-Figure Divisors with a Remainder

Mr. Brown has 195 tomato plants to set out.
 How many rows of 32 plants each can he make?
 How many will he have left over?

$$\begin{array}{r} 6 \\ 32 \overline{) 195} \\ 192 \\ \hline 3 \text{ remainder} \end{array}$$

Check
 32 divisor
 $\times 6$ quotient
 \hline 192
 3 remainder
 \hline 195 dividend

To check division with a remainder multiply the divisor by the quotient and then add the remainder. The result is the dividend

Divide.

a

b

c

d

e

f

1. $\begin{array}{r} 3 \text{ R } 1 \\ 10 \overline{) 31} \\ 30 \\ \hline 1 \end{array}$ $\begin{array}{r} 20 \overline{) 43} \\ 40 \\ \hline 3 \end{array}$ $\begin{array}{r} 10 \overline{) 67} \\ 60 \\ \hline 7 \end{array}$ $\begin{array}{r} 41 \overline{) 86} \\ 84 \\ \hline 2 \end{array}$ $\begin{array}{r} 23 \overline{) 70} \\ 69 \\ \hline 1 \end{array}$ $\begin{array}{r} 12 \overline{) 25} \\ 24 \\ \hline 1 \end{array}$

2. $\begin{array}{r} 21 \overline{) 65} \\ 42 \\ \hline 23 \end{array}$ $\begin{array}{r} 31 \overline{) 67} \\ 31 \\ \hline 36 \end{array}$ $\begin{array}{r} 32 \overline{) 66} \\ 32 \\ \hline 4 \end{array}$ $\begin{array}{r} 42 \overline{) 85} \\ 42 \\ \hline 5 \end{array}$ $\begin{array}{r} 24 \overline{) 49} \\ 48 \\ \hline 1 \end{array}$ $\begin{array}{r} 22 \overline{) 89} \\ 44 \\ \hline 45 \end{array}$

3. $\begin{array}{r} 52 \overline{) 109} \\ 52 \\ \hline 57 \end{array}$ $\begin{array}{r} 21 \overline{) 128} \\ 21 \\ \hline 18 \end{array}$ $\begin{array}{r} 31 \overline{) 159} \\ 31 \\ \hline 18 \end{array}$ $\begin{array}{r} 91 \overline{) 277} \\ 91 \\ \hline 166 \end{array}$ $\begin{array}{r} 81 \overline{) 245} \\ 81 \\ \hline 164 \end{array}$ $\begin{array}{r} 41 \overline{) 168} \\ 41 \\ \hline 168 \end{array}$

4. $\begin{array}{r} 32 \overline{) 136} \\ 96 \\ \hline 40 \end{array}$ $\begin{array}{r} 42 \overline{) 130} \\ 164 \\ \hline 36 \end{array}$ $\begin{array}{r} 53 \overline{) 162} \\ 265 \\ \hline 97 \end{array}$ $\begin{array}{r} 62 \overline{) 190} \\ 124 \\ \hline 66 \end{array}$ $\begin{array}{r} 71 \overline{) 292} \\ 493 \\ \hline 202 \end{array}$ $\begin{array}{r} 82 \overline{) 254} \\ 656 \\ \hline 194 \end{array}$

5. $\begin{array}{r} 23 \overline{) 97} \\ 69 \\ \hline 28 \end{array}$ $\begin{array}{r} 22 \overline{) 135} \\ 44 \\ \hline 90 \end{array}$ $\begin{array}{r} 23 \overline{) 118} \\ 23 \\ \hline 18 \end{array}$ $\begin{array}{r} 22 \overline{) 159} \\ 154 \\ \hline 5 \end{array}$ $\begin{array}{r} 32 \overline{) 199} \\ 96 \\ \hline 103 \end{array}$ $\begin{array}{r} 33 \overline{) 138} \\ 99 \\ \hline 39 \end{array}$

6. $\begin{array}{r} 62 \overline{) 319} \\ 376 \\ \hline 43 \end{array}$ $\begin{array}{r} 53 \overline{) 267} \\ 265 \\ \hline 2 \end{array}$ $\begin{array}{r} 62 \overline{) 378} \\ 378 \\ \hline 0 \end{array}$ $\begin{array}{r} 53 \overline{) 427} \\ 265 \\ \hline 162 \end{array}$ $\begin{array}{r} 52 \overline{) 319} \\ 264 \\ \hline 55 \end{array}$ $\begin{array}{r} 43 \overline{) 259} \\ 172 \\ \hline 87 \end{array}$

Practice with Two-Figure Divisors

Notice that the steps in dividing by a two-figure divisor are exactly the same as in dividing by a one-figure divisor. Work the following problems. The last row has remainders. Watch for them.

	a	b	c	d
1.	$31)2\ 4\ 8$	$42)3\ 7\ 8$	$32)2\ 5\ 6$	$52)4\ 6\ 8$
2.	$54)4\ 8\ 6$	$33)1\ 9\ 8$	$43)3\ 4\ 4$	$21)1\ 8\ 9$
3.	$34)2\ 3\ 8$	$41)3\ 2\ 8$	$34)2\ 0\ 4$	$82)6\ 5\ 6$
4.	$33)2\ 9\ 7$	$52)4\ 1\ 6$	$42)2\ 9\ 4$	$43)3\ 0\ 1$
5.	$43)2\ 5\ 8$	$33)2\ 6\ 4$	$63)4\ 4\ 1$	$33)1\ 6\ 5$
6.	$52)3\ 1\ 2$	$43)3\ 8\ 7$	$82)6\ 5\ 6$	$52)3\ 6\ 4$
7.	$23)1\ 3\ 9$	$43)3\ 0\ 4$	$51)4\ 6\ 4$	$61)3\ 1\ 3$

Division with a Two-Figure Quotient

Divide 861 by 41.

Think: $8 \div 4 = 2$. Write 2 in the quotient above the 6.
 $2 \times 41 = 82$. Write 82 under 86. $86 - 82 = 4$. Bring down the
 1. $41 \div 41 = 1$. Subtract. There is no remainder.

	Check	
	41 divisor	
	21 quotient	
	<u>41</u>	
	82	
	<u>41</u>	
	41 dividend	

Divide.

a

b

c

d

e

1. $11 \overline{) 3 \ 5 \ 2}$

23)5 5 2

42)9 6 6

21)8 8 2

12)2 7 6

2. $21 \overline{) 7 \ 1 \ 4}$

33)5 6 1

22)3 3 0

13)1 6 9

51)5 6 1

3. $32 \overline{) 1 \ 0 \ 2 \ 4}$

92)1 1 9 6

43)2 2 3 6

33)1 7 4 9

81)2 1 8 7

4. Watch for remainders.

$$\begin{array}{r}
 2 \ 3 \ R \ 6 \\
 11)2 \ 5 \ 9 \\
 \underline{2 \ 2} \\
 \underline{3} \ 9 \\
 \underline{3} \ 3 \\
 \underline{6}
 \end{array}$$

41)2 2 3 0

72)2 9 5 6

91)3 0 1 5

22)1 5 6 9

Finding the Right Quotient Figure
Using Two-Figure Divisors Ending in 1, 2, 3, 4, or 5

To find the first quotient figure in

1. $227 \div 11$, think $2 \div 1 = 2$
2. $576 \div 24$, think _____
3. $984 \div 32$, think _____

- $1763 \div 43$, think $17 \div 4 = 4$
- $2214 \div 41$, think _____
- $3015 \div 91$, think _____

When a two-figure divisor ends in 1, 2, 3, 4, or 5, use the first figure of the divisor as the trial divisor.

$$\begin{array}{r} 3 \\ 11 \overline{) 319} \\ 33 \\ \hline \end{array}$$

This rule will help, but sometimes the trial quotient figure is too large.

$$\begin{array}{r} 29 \\ 11 \overline{) 319} \\ 22 \\ \hline 99 \end{array}$$

Divide 319 by 11. Think $3 \div 1 = 3$. Try 3. $3 \times 11 = 33$. 33 cannot be subtracted from 31. Try 2 for the quotient figure.

If the first quotient figure you try is too large, try the next smaller one.

99

Divide.

a

b

c

d

e

4. $12 \overline{) 5 \ 7 \ 6}$ $21 \overline{) 3 \ 7 \ 8}$ $13 \overline{) 3 \ 2 \ 5}$ $15 \overline{) 4 \ 8 \ 0}$ $34 \overline{) 2 \ 0 \ 7 \ 4}$

5. $54 \overline{) 2 \ 0 \ 5 \ 2}$ $41 \overline{) 7 \ 7 \ 9}$ $13 \overline{) 2 \ 0 \ 8}$ $62 \overline{) 2 \ 5 \ 4 \ 2}$ $25 \overline{) 1 \ 5 \ 2 \ 5}$

6. Find the quotients and remainders.

$52 \overline{) 6 \ 4 \ 1}$ $85 \overline{) 2 \ 5 \ 1 \ 1}$ $43 \overline{) 3 \ 2 \ 0 \ 4}$ $24 \overline{) 1 \ 9 \ 6 \ 7}$ $32 \overline{) 3 \ 1 \ 4 \ 3}$

Finding the Right Quotient Figure
Using Two-Figure Divisors Ending in 6, 7, 8, or 9

When a two-figure divisor ends in 6, 7, 8, or 9, you can find the right quotient figure more quickly by adding 1 to the first figure of the divisor.

To find the first quotient figure of

$841 \div 19$, since 19 is nearly 20, think $8 \div 2 = 4$.

$435 \div 18$, think $4 \div 2 = 2$

$5059 \div 76$, think $50 \div 8$

The above rule makes your work easier, but it does not always give the correct quotient figure.

Divide 2257 by 37. Think $22 \div 4 = 5$. $5 \times 37 = 185$. $225 - 185 = 40$.

$$\begin{array}{r}
 & & 5 \\
 37) & 2257 \\
 & 185 \\
 \hline
 & 40 \\
 & 37 \\
 \hline
 & 37
 \end{array}$$

The trial quotient figure is too small because your remainder is larger than your divisor. Try 6. 6 is the right quotient figure.

When the trial quotient figure is too small, try the next larger one.

Divide.

a

b

c

d

e

1. $27)5\ 1\ 3$ $56)3\ 1\ 3\ 6$ $79)3\ 3\ 1\ 8$ $38)1\ 1\ 7\ 8$ $39)1\ 7\ 5\ 5$

2. $46)7\ 3\ 6$ $29)2\ 3\ 2$ $57)1\ 7\ 6\ 7$ $88)3\ 2\ 5\ 6$ $17)1\ 6\ 6\ 6$

3. Write quotients and remainders.

$76)1\ 3\ 7\ 0$ $58)2\ 3\ 8\ 1$ $19)6\ 7\ 2$ $47)3\ 5\ 4\ 0$ $88)7\ 2\ 9\ 9$

Finding the Right Quotient Figure

Mr. White has 144 quarts of berries to send to market. If he puts them in cases holding 24 quarts each, how many cases does he need?

$$\begin{array}{r} 7 \\ 24 \overline{) 144} \\ 168 \\ \hline \end{array}$$

Think: $14 \div 2 = 7$. Try 7×24 . Can you multiply without writing it out? Think $7 \times 4 = 28$. Then think $7 \times 2 = 14$, $+2 = 16$. The product is 168. The trial divisor 7 is too large. Try 6. $6 \times 24 = 144$. Mr. White needs 6 cases.

$$\begin{array}{r} 6 \\ 24 \overline{) 144} \\ 144 \\ \hline \end{array}$$

In the following multiply and write the product. Remember what you are to carry. This will help you in division.

a

b

c

d

1. $6 \times 12 =$ _____	$5 \times 42 =$ _____	$7 \times 54 =$ _____	$9 \times 81 =$ _____
2. $8 \times 37 =$ _____	$4 \times 43 =$ _____	$6 \times 78 =$ _____	$9 \times 27 =$ _____
3. $8 \times 86 =$ _____	$7 \times 39 =$ _____	$9 \times 63 =$ _____	$6 \times 53 =$ _____
4. $5 \times 81 =$ _____	$9 \times 95 =$ _____	$8 \times 42 =$ _____	$7 \times 82 =$ _____
5. $9 \times 40 =$ _____	$8 \times 15 =$ _____	$7 \times 67 =$ _____	$6 \times 54 =$ _____

For each of the following find the first quotient figure, then write it in the blank. Remember you may need to try more than once.

6. $1098 \div 23$ _____	$1688 \div 42$ _____	$4782 \div 82$ _____	$1379 \div 24$ _____
7. $381 \div 14$ _____	$1750 \div 38$ _____	$3311 \div 39$ _____	$2419 \div 69$ _____
8. $1904 \div 28$ _____	$1220 \div 26$ _____	$1702 \div 37$ _____	$2490 \div 46$ _____

Find the quotients.

a

b

c

d

e

9. $38 \overline{) 1 \ 9 \ 3 \ 8}$	$42 \overline{) 1 \ 5 \ 1 \ 2}$	$31 \overline{) 2 \ 9 \ 7 \ 6}$	$59 \overline{) 4 \ 2 \ 4 \ 8}$	$45 \overline{) 1 \ 6 \ 2 \ 0}$
------------------------------------	---------------------------------	---------------------------------	---------------------------------	---------------------------------

Score _____ (20)

Three-Figure Quotients

You find a three-figure quotient the same as you find a two-figure quotient, except that you must divide three times.

Study the examples. Divide and check each of the others.

a

b

c

1.
$$\begin{array}{r} 132 \\ 21)2772 \\ 21 \\ \hline 67 \\ 63 \\ \hline 42 \\ 42 \\ \hline \end{array}$$
 Check

$$19)3\ 3\ 0\ 6$$

$$32)2\ 0\ 5\ 1\ 2$$

2.
$$48)2\ 0\ 9\ 2\ 8$$

$$53)3\ 4\ 1\ 8\ 5$$

$$38)1\ 0\ 4\ 8\ 8$$

3.
$$67)5\ 5\ 0\ 0\ 7$$

$$74)6\ 7\ 4\ 1\ 4$$

$$85)6\ 7\ 0\ 6\ 5$$

4.
$$\begin{array}{r} 121\ R\ 4 \\ 96)11620 \\ 96 \\ \hline 202 \\ 192 \\ \hline 100 \\ 96 \\ \hline 4 \\ 11620 \end{array}$$

$$49)2\ 6\ 4\ 2\ 2$$

$$14)1\ 2\ 2\ 2\ 8$$

Zero at the End of the Quotient

Study the examples.

$ \begin{array}{r} 60 \\ 7)420 \\ 42 \\ \hline 0 \\ \hline 0 \end{array} $	$ \begin{array}{r} 80 \text{ R } 2 \\ 6)482 \\ 48 \\ \hline 2 \\ \hline 0 \end{array} $	$ \begin{array}{r} 800 \\ 8)6400 \\ 64 \\ \hline 0 \\ \hline 0 \end{array} $	$ \begin{array}{r} 340 \\ 12)4080 \\ 36 \\ \hline 48 \\ \hline 48 \\ \hline 0 \end{array} $
--	---	--	---

Remember that every time you bring down a figure you must put a figure in the quotient.

Divide.

a

b

c

d

e

1. $8)6\ 4\ 0$ 9)8 1 0 7)5 6 0 4)4 8 0 6)4 2 0 0

2. 12)4 8 0 16)6 4 0 18)1 6 2 0 12)6 0 0 0 19)1 5 2 0

Watch for remainders.

3. 7)2 8 1 9)8 1 8 7)7 0 1 5)5 5 4 6)8 4 5

Score _____ (20)

Zero in the Quotient

Mr. Smith has 2520 quarts of berries to take to market. He puts 24 quarts in a case. How many cases does he need?

Think: $2 \div 2 = 1$. Write 1 in the quotient over 5. $1 \times 24 = 24$. Subtract. Bring down the 2. 24 will not go in 12. Write 0 in the quotient. Bring down 0. $120 \div 24 = 5$. Write 5 in the quotient. $5 \times 24 = 120$. There is no remainder. Mr. Smith needed 105 cases.

$$\begin{array}{r} 105 \\ 24 \overline{) 2520} \\ 24 \\ \hline 120 \\ 120 \\ \hline 0 \end{array}$$

Divide.

a

b

c

d

e

1. $6 \overline{) 3 \ 6 \ 4 \ 2}$ $4 \overline{) 3 \ 2 \ 1 \ 2}$ $7 \overline{) 6 \ 3 \ 1 \ 4}$ $9 \overline{) 8 \ 1 \ 1 \ 8}$ $8 \overline{) 6 \ 4 \ 0 \ 8}$

2. $15 \overline{) 1 \ 5 \ 6 \ 0}$ $37 \overline{) 7 \ 7 \ 3 \ 3}$ $33 \overline{) 1 \ 3 \ 3 \ 9 \ 8}$ $48 \overline{) 9 \ 9 \ 3 \ 6}$ $72 \overline{) 1 \ 4 \ 4 \ 7 \ 2}$

Find the quotients and remainders.

3. $9 \overline{) 7 \ 2 \ 0 \ 8}$ $8 \overline{) 5 \ 6 \ 0 \ 9}$ $15 \overline{) 3 \ 1 \ 3 \ 9}$ $23 \overline{) 1 \ 3 \ 9 \ 9 \ 0}$ $34 \overline{) 1 \ 0 \ 5 \ 2 \ 6}$

4. $46 \overline{) 1 \ 8 \ 7 \ 3 \ 2}$ $52 \overline{) 5 \ 6 \ 3 \ 1}$ $17 \overline{) 1 \ 1 \ 9 \ 4 \ 0}$ $11 \overline{) 9 \ 9 \ 0 \ 1}$ $10 \overline{) 1 \ 0 \ 0 \ 6}$

Score _____ (10)

Dividing Money Numbers

The fifth grade bought 6 soft balls for \$10.50. How much did one ball cost?

$$\begin{array}{r} \$1.75 \\ 6) \$10.50 \\ \underline{6} \\ 45 \\ \underline{42} \\ 30 \\ \underline{30} \end{array}$$

Divide dollars and cents the same way you divide other numbers.

Place the decimal point in the quotient directly over the decimal point in the dividend. Remember to write the dollar sign before your answer.

1. If 9 books cost \$15.75, how much will

one book cost? _____

2. Mrs. Gates sold 19 hens for \$35.15.

What was the average price she received for

each? _____

Divide.

a

b

c

d

3. $12) \$3.6\ 0$

$22) \$1\ 3.4\ 2$

$44) \$3\ 3.4\ 4$

$46) \$7\ 9.1\ 2$

4. $17) \$4\ 0.8\ 0$

$88) \$2\ 2.8\ 8$

$37) \$4\ 9.5\ 8$

$49) \$3\ 8.7\ 1$

Do You Remember?

Score _____ (5)

$$\begin{array}{r} \$2\ 0.1\ 4 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} \$1\ 8.5\ 0 \\ \times 1\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} \$2\ 0.1\ 0 \\ \times 2\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} \$1\ 8\ 9.4\ 6 \\ \times 5\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} \$1\ 0\ 0.7\ 5 \\ \times 7\ 8 \\ \hline \end{array}$$

Do You Multiply or Divide?

1. A fifth grade rented a bus to take them to the mountains. The total trip cost \$11.34. If there were 42 pupils on the trip, how much

did each pay? _____

2. If three basketballs cost \$6.75, how much does one cost? _____

3. If one ticket costs \$.15, how much will 25 tickets cost? _____

4. There are 21 passengers on an airplane. If the passengers took on the average 40 pounds of luggage each, how many pounds of luggage did the plane carry? _____

5. Sally bought 8 post cards. If the cards are 2 for 5 cents, how much did she spend?

6. Fred had 165 shells in his science collection. He put them in boxes, 30 in each box. How many full boxes did he have?

How many extra shells did he have?

7. On Helen's birthday her mother sent 128 cookies to school. If there were 32 children in the room, how many did each receive? _____

8. Mr. Smith earns \$8.75 a day. He works 6 days a week. How much does he earn each week? _____

9. There are 35 children in Miss Smith's room. If each child needs 9 sheets of paper to make a booklet, how many sheets in all must Miss Smith bring to the room?

10. A baker sold 36 cakes at \$.95 each. How much money did he receive?

Finding Averages

John decided to work on his multiplication tables. After four periods of practicing, he took tests. What was his average if his marks were 80, 75, 75, and 90?

First Step	Second Step
80	80 average
75	
75	
90	
320	sum

To find the average, we first add the numbers to find the sum or total. Then we divide by the number of tests taken. The result is the **average**.

1. Mary practiced her piano lessons 30 minutes on Monday, 35 on Tuesday, 30 on Wednesday, 25 on Thursday, and 20 on Friday. On the average, how

many minutes did she practice each day? _____

2. Tom's mother said that last week she spent \$24.50 for food. What was the average per day? _____

3. The Girl Scouts took three hikes in October. The first Saturday they walked 4 miles, the second Saturday 6 miles, and the third, 5 miles. How many miles did

they average on a trip? _____

4. The total weight of 9 fifth-grade boys is 801 pounds. What is the average weight? _____

5. A farmer raised 256 bushels of wheat on 8 acres of land. What was the average number of bushels per acre?

6. The rainfall for Michigan was 37 inches one year, 38 the next, 40 the next, 39 the next, and 41 the fifth

year. What was the average for a year? _____

7. Mary keeps a record of her spelling grades. One week the marks were 93, 92, 89, 88, and 98. What is her average spelling grade for the week? _____

8. Last week there were 34 pupils in the fifth grade on Monday, 40 on Tuesday, 36 on Wednesday, 39 on Thursday, and 41 on Friday. What was the average daily attendance last week? _____

9. The distance from Chicago to Denver is 1074 miles. The Browns expect to drive it in 3 days. How many miles must they average each day? _____

Score _____ (20)

Unit Test 2

1. What is the answer in division called? _____
2. $19 \div 2 =$ _____ with a remainder of _____.
3. $35 \div 8 =$ _____ with a remainder of _____.
4. $850 \div 10 =$ _____.
5. $61 \times 10 =$ _____.
6. To find the average of five numbers, we first _____ the numbers and then divide their sum by _____.

7. $9 \overline{) 72}$

8. $7 \overline{) 420}$

9. $3 \overline{) 68}$

10. $6 \overline{) 624}$

11. Mrs. Jones bought 3 yards of blue ribbon for badges. How many badges can she make if each badge is 9 inches long? Re-

member there are 36 inches in a yard. _____

12. Mrs. White is to make pies for the Thanksgiving dinner. How many pies will she need if she cuts each pie into 6 pieces and there are 48 people at the dinner?

13. John's spelling grades were 91, 78, 92,

88, and 96. What was his average? _____

14. If John's father earns \$4824 a year, how much does he earn each month?

15. $\frac{1}{2}$ of 208 = _____

16. $\frac{1}{4}$ of 268 = _____

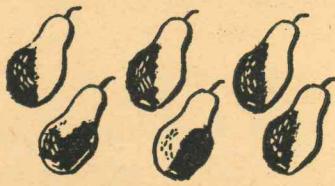
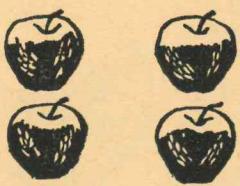
17. $11 \overline{) 374}$

18. $12 \overline{) 2448}$

19. $27 \overline{) 2511}$

20. $46 \overline{) 25346}$

UNIT 3. LEARNING MORE ABOUT FRACTIONS



Finding Parts of Numbers

The pictures of the fruits above will help you to find the answers to the following problems.

1. Mary wants to give half of the apples to Jane and keep half of them. How many apples will each get? $\frac{1}{2}$ of 4 = _____

2. While Mary was washing the apples, Judy and Helen came in. Now she must share the apples with Judy and Helen as well as Jane. How many apples will each girl receive? $\frac{1}{4}$ of 4 = _____

3. Mrs. John placed 6 pears on the table for Harry and Jack. How many will each have? $\frac{1}{2}$ of 6 = _____

4. The boys knew that their father liked pears, so they divided the pears into three equal groups. How many pears did each get? $\frac{1}{3}$ of 6 = _____

5. There were 4 plums left after dinner. Mother saved them for Harry's and Jack's lunch. How many were there for each boy's lunch? $\frac{1}{2}$ of 4 = _____

How many are:

a

b

c

6. $\frac{1}{4}$ of 8 = _____

$\frac{1}{2}$ of 12 = _____

$\frac{1}{2}$ of 6 = _____

7. $\frac{1}{8}$ of 8 = _____

$\frac{1}{4}$ of 4 = _____

$\frac{1}{3}$ of 6 = _____

8. $\frac{1}{2}$ of 8 = _____

$\frac{1}{4}$ of 12 = _____

$\frac{1}{6}$ of 6 = _____

9. $\frac{1}{2}$ of 4 = _____

$\frac{1}{6}$ of 12 = _____

$\frac{1}{2}$ of 2 = _____

10. $\frac{1}{2}$ of 24 = _____

$\frac{1}{4}$ of 16 = _____

$\frac{1}{3}$ of 3 = _____

11. $\frac{1}{3}$ of 24 = _____

$\frac{1}{6}$ of 18 = _____

$\frac{1}{4}$ of 20 = _____

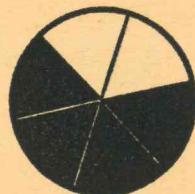
What a Fraction Means

Mary's mother made a pie. She cut it into 6 equal pieces. She gave Mary and Ruth each a piece. What part of the pie was left?

The fraction $\frac{4}{6}$ is read four sixths. The part above the line is called the numerator. The part below the line is the denominator. The denominator of a fraction tells into how many equal parts a thing has been divided. The numerator tells how many of these parts we are talking about. The pie was cut into 6 equal pieces and there were 4 pieces left.

$\frac{3}{4}$ means We are talking about 3 of the equal parts.
 $\frac{4}{4}$ Something was divided into 4 equal parts.

Write what each of the following fractions means.



$\frac{4}{6}$ numerator
 $\frac{6}{6}$ denominator

1. $\frac{2}{3}$ means _____
2. $\frac{1}{2}$ means _____
3. $\frac{5}{6}$ means _____
4. $\frac{3}{8}$ means _____
5. Write the fraction that means something has been divided into five equal parts and that we are talking about 2 of them. _____
6. Write the fraction that means something has been divided into eight equal parts and that we are talking about two of them. _____
7. If a pie is cut into 8 equal pieces and John eats 2 of them what part of the pie does he eat? _____ What part of the pie is left? _____
8. To divide an apple into fourths we must cut it into _____ equal parts.
9. Write these fractions.

a

b

c

d

one half _____ two thirds _____ two fourths _____ three fifths _____

Terms of a Fraction

Score _____ (22)

The two numbers in a fraction are called the terms of the fraction. In $\frac{4}{6}$, 4 and 6 are the terms. The fraction $\frac{4}{6} = \frac{2}{3}$. You can change $\frac{4}{6}$ to $\frac{2}{3}$ by dividing both terms by 2. This is called reduction of fractions. You must remember that when you reduce a fraction you do not change its value.

 $\frac{4}{6}$

$$\frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

When a fraction cannot be changed to an easier fraction by dividing its terms by the same number, the fraction is in its lowest terms. $\frac{1}{3}, \frac{2}{3}, \frac{3}{5}$ are in lowest terms.

To reduce a fraction to lowest terms always use the largest possible divisor.

Reduce the following fractions to lowest terms. When you can, divide both terms by the number in the numerator.

	a	b	c	d
1.	$\frac{2}{4} = \frac{1}{2}$	$\frac{3}{6} = \frac{1}{2}$	$\frac{2}{6} = \frac{1}{3}$	$\frac{2}{8} = \frac{1}{4}$
2.	$\frac{4}{8} = \frac{1}{2}$	$\frac{2}{10} = \frac{1}{5}$	$\frac{6}{12} = \frac{1}{2}$	$\frac{4}{6} = \frac{2}{3}$
3.	$\frac{8}{10} = \frac{4}{5}$	$\frac{4}{12} = \frac{1}{3}$	$\frac{8}{16} = \frac{1}{2}$	$\frac{9}{12} = \frac{3}{4}$
4.	$\frac{10}{20} = \frac{1}{2}$	$\frac{6}{8} = \frac{3}{4}$	$\frac{6}{24} = \frac{1}{4}$	$\frac{10}{12} = \frac{5}{6}$

Write after each pair of numbers the largest number that will divide both numbers.

5.	2, 4	2	6, 9	3	8, 24	8	27, 36	9
6.	7, 49	7	18, 24	6	14, 21	7	25, 35	5

Do you remember how to write quotients with remainders?

Score _____ (13)

	a	b	c	d	e	f	g
1.	$2\overline{)5} \text{ R } 1$	$3\overline{)7}$	$2\overline{)9}$	$4\overline{)7}$	$7\overline{)15}$	$8\overline{)17}$	$4\overline{)15}$
	$\frac{4}{1}$						
2.	$5\overline{)9}$	$2\overline{)17}$	$8\overline{)25}$	$4\overline{)13}$	$5\overline{)16}$	$5\overline{)18}$	$7\overline{)10}$

Changing Improper Fractions to Whole Numbers or Mixed Numbers

If the numerator of a fraction is smaller than the denominator, the fraction is a proper fraction. $\frac{1}{2}$ and $\frac{2}{3}$ are proper fractions.

If the numerator of a fraction is equal to, or larger than, the denominator, the fraction is an improper fraction. $\frac{2}{2}$ and $\frac{6}{5}$ are improper fractions.

A number made up of a whole number and a fraction is a mixed number. $1\frac{3}{4}$ and $6\frac{1}{2}$ are mixed numbers.

Mary practiced $\frac{1}{2}$ hour in the morning and $\frac{1}{2}$ hour in the afternoon. How long did she practice in all? We know that two halves = 1.

$$\begin{array}{r} \frac{1}{2} \\ \frac{1}{2} \\ + \frac{1}{2} \\ \hline \frac{2}{2} = 1 \text{ hour} \end{array}$$

Ruth practiced $\frac{3}{4}$ of an hour on Monday, $\frac{3}{4}$ of an hour on Tuesday, and $\frac{3}{4}$ of an hour on Wednesday. How long did she practice in all?

We know there are 4 fourths in one whole thing, so we divide 9 by 4 and get $2\frac{1}{4}$.

$$\begin{array}{r} \frac{3}{4} \\ \frac{3}{4} \\ \frac{3}{4} \\ \hline \frac{9}{4} \\ \frac{9}{4} \\ \frac{9}{4} = 2\frac{1}{4} \text{ hours} \end{array}$$

To change an improper fraction to a whole number or a mixed number, divide the numerator by the denominator.

Change these to whole numbers or mixed numbers.

	a	b	c	d	e
1.	$\frac{9}{3} =$	$\frac{3}{2} =$	$\frac{5}{4} =$	$\frac{4}{2} =$	$\frac{2}{2} =$
2.	$\frac{4}{3} =$	$\frac{5}{2} =$	$\frac{6}{2} =$	$\frac{6}{5} =$	$\frac{7}{2} =$
3.	$\frac{5}{3} =$	$\frac{7}{3} =$	$\frac{8}{2} =$	$\frac{7}{4} =$	$\frac{8}{8} =$
4.	$\frac{6}{3} =$	$\frac{8}{3} =$	$\frac{8}{5} =$	$\frac{8}{7} =$	$\frac{9}{2} =$
5.	$\frac{8}{4} =$	$\frac{9}{3} =$	$\frac{9}{5} =$	$\frac{10}{7} =$	$\frac{9}{4} =$

Adding Like Fractions

If John and Harry each ate $\frac{1}{3}$ of a pie, how much did they both eat?

Think 1 apple and 1 apple = 2 apples

1 third and 1 third = 2 thirds

$$\frac{1}{3} \text{ and } \frac{1}{3} = \frac{2}{3}, \text{ or } \frac{1}{3}$$

$$\begin{array}{r} + \frac{1}{3} \\ \hline \frac{2}{3} \end{array}$$

Fractions that have the same denominator are like fractions.
Study the example above and then work these.

1.	a $\frac{1}{7}$ $+\frac{1}{7}$ <hr/> $\frac{2}{7}$	b $\frac{1}{5}$ $+\frac{1}{5}$ <hr/> $\frac{2}{5}$	c $\frac{1}{6}$ $+\frac{4}{6}$ <hr/> $\frac{5}{6}$	d $\frac{2}{8}$ $+\frac{3}{8}$ <hr/> $\frac{5}{8}$	e $\frac{1}{4}$ $+\frac{2}{4}$ <hr/> $\frac{3}{4}$	f $\frac{1}{5}$ $+\frac{3}{5}$ <hr/> $\frac{4}{5}$	g $\frac{3}{7}$ $+\frac{1}{7}$ <hr/> $\frac{4}{7}$	h $\frac{4}{8}$ $+\frac{1}{8}$ <hr/> $\frac{5}{8}$
----	---	---	---	---	---	---	---	---

The answers to all problems should be reduced to lowest terms. Be sure to reduce these.

2.	a $\frac{1}{4}$ $+\frac{1}{4}$ <hr/> $\frac{2}{4} = \frac{1}{2}$	b $\frac{1}{6}$ $+\frac{2}{6}$ <hr/> $\frac{3}{6}$	c $\frac{2}{9}$ $+\frac{1}{9}$ <hr/> $\frac{3}{9}$	d $\frac{1}{10}$ $+\frac{5}{10}$ <hr/> $\frac{6}{10}$	e $\frac{3}{16}$ $+\frac{1}{16}$ <hr/> $\frac{4}{16}$
3.	$\frac{1}{6}$ $+\frac{1}{6}$ <hr/> $\frac{2}{6}$	$\frac{7}{12}$ $+\frac{2}{12}$ <hr/> $\frac{9}{12}$	$\frac{1}{10}$ $+\frac{1}{10}$ <hr/> $\frac{2}{10}$	$\frac{3}{16}$ $+\frac{5}{16}$ <hr/> $\frac{8}{16}$	$\frac{2}{6}$ $+\frac{2}{6}$ <hr/> $\frac{4}{6}$
4.	$\frac{3}{10}$ $+\frac{2}{10}$ <hr/> $\frac{5}{10}$	$\frac{1}{8}$ $+\frac{1}{8}$ <hr/> $\frac{2}{8}$	$\frac{3}{9}$ $+\frac{3}{9}$ <hr/> $\frac{6}{9}$	$\frac{3}{8}$ $+\frac{3}{8}$ <hr/> $\frac{6}{8}$	$\frac{5}{12}$ $+\frac{5}{12}$ <hr/> $\frac{10}{12}$

Change answers to whole numbers or mixed numbers.

5.	$\frac{1}{3}$ <hr/> $\frac{1}{3}$	$\frac{1}{4}$ <hr/> $\frac{2}{4}$	$\frac{5}{6}$ <hr/> $\frac{5}{6}$	$\frac{3}{10}$ <hr/> $\frac{3}{10}$	$\frac{7}{8}$ <hr/> $\frac{3}{8}$
					$\frac{1}{8}$

Adding Mixed Numbers

Frank bought $1\frac{2}{3}$ lb. pork and $2\frac{2}{3}$ lb. beef. How many pounds is that in all?

Think. $1\frac{2}{3}$ and $2\frac{2}{3}$ equal $3\frac{4}{3}$ lb. Since $\frac{4}{3}$ is an improper fraction, it must be reduced.

$$\frac{4}{3} = 3\frac{1}{3}$$

$$\frac{4}{3} = 3 + 1\frac{1}{3} \text{ or } 4\frac{1}{3} \text{ lb.}$$

Be sure to add the whole numbers.

$$\begin{array}{r} 1\frac{2}{3} \\ + 2\frac{2}{3} \\ \hline 3\frac{4}{3} = 4\frac{1}{3} \text{ lb.} \end{array}$$

1.	a $2\frac{3}{4}$ $4\frac{3}{4}$ <hr/>	b $6\frac{1}{2}$ $7\frac{1}{2}$ <hr/>	c $8\frac{2}{3}$ $3\frac{2}{3}$ <hr/>	d $7\frac{1}{4}$ $8\frac{3}{4}$ <hr/>	e $9\frac{3}{5}$ $8\frac{3}{5}$ <hr/>
----	---	---	---	---	---

2.	$2\ 1\ \frac{5}{8}$ $1\ 6\ \frac{7}{8}$ <hr/>	$1\ 4\ \frac{5}{9}$ $3\ \frac{5}{9}$ <hr/>	$1\ 6\ \frac{4}{5}$ $1\ 4\ \frac{3}{5}$ <hr/>	$3\ 4\ \frac{5}{6}$ $1\ 9\ \frac{5}{6}$ <hr/>	$4\ 3\ \frac{7}{8}$ $5\ 7\ \frac{7}{8}$ <hr/>
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Which fraction is larger?

3.	a $\frac{1}{2}$ or $\frac{1}{3}$? _____	b $\frac{1}{4}$ or $\frac{1}{8}$? _____	c $\frac{1}{3}$ or $\frac{1}{4}$? _____	d $2\frac{1}{2}$ or $1\frac{5}{8}$? _____
4.	$\frac{1}{6}$ or $\frac{1}{8}$? _____	$\frac{1}{6}$ or $\frac{1}{4}$? _____	$\frac{1}{5}$ or $\frac{1}{4}$? _____	$2\frac{1}{3}$ or $2\frac{1}{6}$? _____
5.	$\frac{1}{3}$ or $\frac{1}{6}$? _____	$\frac{1}{3}$ or $\frac{1}{8}$? _____	$\frac{1}{5}$ or $\frac{1}{7}$? _____	$5\frac{2}{10}$ or $5\frac{1}{2}$? _____
6.	$\frac{1}{7}$ or $\frac{1}{4}$? _____	$\frac{1}{5}$ or $\frac{3}{10}$? _____	$\frac{3}{4}$ or $\frac{2}{3}$? _____	$4\frac{3}{6}$ or $4\frac{1}{3}$? _____
7.	$\frac{2}{5}$ or $\frac{3}{6}$? _____	$\frac{4}{5}$ or $\frac{3}{4}$? _____	$\frac{2}{9}$ or $\frac{1}{6}$? _____	$8\frac{3}{4}$ or $7\frac{2}{3}$? _____

Arrange these fractions according to their value with the smallest one first.

8.	a $\frac{3}{6}, \frac{5}{6}, \frac{2}{6}$	b $\frac{7}{8}, \frac{3}{8}, \frac{5}{8}$	c $\frac{5}{12}, \frac{7}{12}, \frac{1}{12}$
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Practice in Subtraction of Fractions and Mixed Numbers

One day Harry had $\frac{3}{5}$ of a pie. If he gave John $\frac{1}{5}$ of it, how much would he then have?

Think. 3 apples - 1 apple = 2 apples
3 fifths - 1 fifth = 2 fifths

$$\begin{array}{r} \frac{3}{5} \\ - \frac{1}{5} \\ \hline \frac{2}{5} \end{array}$$

If you have studied the problem above, do these.

1.	a $\frac{3}{5}$ $\underline{- \frac{2}{5}}$	b $\frac{5}{6}$ $\underline{- \frac{4}{6}}$	c $\frac{7}{8}$ $\underline{- \frac{6}{8}}$	d $\frac{3}{4}$ $\underline{- \frac{2}{4}}$	e $\frac{5}{9}$ $\underline{- \frac{1}{9}}$
----	---	---	---	---	---

Remember to reduce the answers of these.

2.	$\frac{7}{8}$ $\underline{- \frac{5}{8}}$ $\frac{2}{8} = \frac{1}{4}$	$\frac{6}{9}$ $\underline{- \frac{3}{9}}$	$\frac{3}{4}$ $\underline{- \frac{1}{4}}$	$\frac{5}{6}$ $\underline{- \frac{1}{6}}$	$\frac{7}{8}$ $\underline{- \frac{3}{8}}$
----	---	--	--	--	--

3.	$\frac{8}{9}$ $\underline{- \frac{2}{9}}$	$\frac{5}{6}$ $\underline{- \frac{3}{6}}$	$\frac{5}{8}$ $\underline{- \frac{1}{8}}$	$\frac{7}{8}$ $\underline{- \frac{1}{8}}$	$\frac{7}{9}$ $\underline{- \frac{4}{9}}$
----	--	--	--	--	--

4.	$\frac{8}{10} \frac{9}{10}$ $\underline{- 4 \frac{4}{10}}$ $4 \frac{5}{10} = 4 \frac{1}{2}$	$7 \frac{10}{12}$ $\underline{- 5 \frac{7}{12}}$	$4 \frac{5}{6}$ $\underline{- 3 \frac{1}{6}}$	$6 \frac{5}{8}$ $\underline{- \frac{3}{8}}$	$9 \frac{7}{10}$ $\underline{- \frac{5}{10}}$
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5.	$\frac{5}{8} - \frac{1}{8} = \underline{\quad}$	$\frac{9}{10} - \frac{1}{10} = \underline{\quad}$	$10 \frac{7}{8} - 2 \frac{1}{8} = \underline{\quad}$
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6.	$\frac{8}{9} - \frac{5}{9} = \underline{\quad}$	$\frac{11}{12} - \frac{1}{12} = \underline{\quad}$	$14 \frac{3}{4} - 1 \frac{1}{4} = \underline{\quad}$
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7.	$\frac{7}{8} - \frac{2}{8} = \underline{\quad}$	$\frac{11}{12} - \frac{2}{12} = \underline{\quad}$	$\frac{11}{12} - \frac{3}{12} = \underline{\quad}$
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Subtracting Mixed Numbers from Whole Numbers

Mr. Brown bought 4 quarts of oil for his car. He used $2\frac{1}{2}$ quarts. How many quarts were left?

$$\begin{array}{r} 4 = 3\frac{2}{2} \\ - 2\frac{1}{2} \\ \hline 1\frac{1}{2} \end{array}$$

Since there were no halves to take $\frac{1}{2}$ from, we borrow 1 from the 4. The 1 we borrow we write as $\frac{2}{2}$, and we write the 4 as $3\frac{2}{2}$. Then we can subtract. There are $1\frac{1}{2}$ gallons left.

Study these examples which are worked for you.

$$\begin{array}{r} a \\ 7 = 6\frac{3}{3} \\ - 3\frac{1}{3} \\ \hline 3\frac{2}{3} \end{array}$$

$$\begin{array}{r} b \\ 6 = 5\frac{8}{8} \\ - 5\frac{1}{8} \\ \hline \frac{7}{8} \end{array}$$

$$\begin{array}{r} c \\ 30 = 29\frac{6}{6} \\ - 9\frac{5}{6} \\ \hline 20\frac{1}{6} \end{array}$$

Subtract.

$$\begin{array}{r} 1. \quad 6 \\ \underline{1\frac{3}{4}} \\ \hline \end{array} \quad \begin{array}{r} 8 \\ \underline{3\frac{1}{2}} \\ \hline \end{array} \quad \begin{array}{r} 7 \\ \underline{6\frac{1}{6}} \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 7 \\ \underline{2\frac{5}{8}} \\ \hline \end{array} \quad \begin{array}{r} 1 \ 7 \\ \underline{9\frac{2}{3}} \\ \hline \end{array} \quad \begin{array}{r} 3 \ 6 \\ \underline{2 \ 9\frac{7}{8}} \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 1 \ 5 \\ \underline{5\frac{1}{8}} \\ \hline \end{array} \quad \begin{array}{r} 8 \ 1 \\ \underline{1 \ 6\frac{7}{9}} \\ \hline \end{array} \quad \begin{array}{r} 1 \ 9 \\ \underline{7\frac{9}{10}} \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 1 \ 0 \ 0 \\ \underline{9 \ 7\frac{5}{8}} \\ \hline \end{array} \quad \begin{array}{r} 1 \ 6 \\ \underline{3\frac{7}{8}} \\ \hline \end{array} \quad \begin{array}{r} 1 \ 7 \ 2 \\ \underline{6 \ 9\frac{7}{12}} \\ \hline \end{array}$$

Borrowing in Subtraction of Fractions

Mary bought $3\frac{1}{4}$ yards of ribbon. She used $\frac{3}{4}$ of a yard of it. How much ribbon has she left? $3\frac{1}{4} - \frac{3}{4} = ?$

$$\begin{array}{r} 3\frac{1}{4} = 2\frac{5}{4} \\ 3\frac{3}{4} \\ \hline 2\frac{2}{4} = 2\frac{1}{2} \end{array}$$

You cannot take $\frac{3}{4}$ from $\frac{1}{4}$. You can borrow 1 from 3. 1 is $\frac{4}{4}$. You can add $\frac{4}{4}$ to $\frac{1}{4}$ and get $\frac{5}{4}$. Now you can subtract. Mary has $2\frac{1}{2}$ yards of ribbon left.

Subtract. Reduce all fractions in the answers to lowest terms.

a	b	c
1. $4\frac{1}{3}$	$3\frac{2}{5}$	$1\frac{1}{8}$
$\underline{- \frac{2}{3}}$	$\underline{- \frac{3}{5}}$	$\underline{- \frac{5}{8}}$

2.	$6\frac{7}{12}$	$1\frac{7}{4}$
	$9\frac{1}{10}$	$1\frac{3}{4}$
$\underline{- 1\frac{11}{12}}$	$\underline{- \frac{5}{10}}$	$\underline{- \frac{3}{4}}$

3.	$6\frac{1}{3}$	$7\frac{9}{12}$
	$9\frac{3}{5}$	$4\frac{11}{12}$
$\underline{- 5\frac{2}{3}}$	$\underline{- \frac{4}{5}}$	$\underline{- \frac{9}{12}}$

4.	$1\frac{1}{16}$	$3\frac{3}{10}$
	$6\frac{1}{8}$	$2\frac{5}{10}$
$\underline{- \frac{15}{16}}$	$\underline{- \frac{7}{8}}$	$\underline{- \frac{5}{10}}$

5. Mrs. Brown bought $6\frac{1}{4}$ yards of cloth. She used $2\frac{3}{4}$ yards to make Mary a dress. How much cloth was left? _____

6. Frank is $48\frac{1}{4}$ inches tall and his brother John is $43\frac{3}{4}$ inches tall. How much taller is Frank? _____

7. Larry weighed $87\frac{3}{4}$ pounds in November. In December he weighed $90\frac{1}{4}$ pounds. How much had he gained? _____

Making Sure of Fractions

Put the right word or number in each blank.

1. There are _____ terms in a fraction.
2. In the fraction $\frac{3}{4}$, the 4 tells me that something has been divided into _____ equal parts. The 3 tells me that we are talking about _____ of the parts.
3. The denominator names the fraction. The 8 in $\frac{3}{8}$ tells me that each part is an _____.
4. To find $\frac{1}{4}$ I _____ by 4.
5. To find $\frac{3}{4}$ I divide by _____ to find $\frac{1}{4}$; then I multiply the quotient by _____ to find $\frac{3}{4}$.
6. To find $\frac{1}{5}$ I divide by _____.
7. $\frac{1}{6}$ of 12 = _____ and $\frac{5}{6}$ of 12 = _____.
8. (a) $\frac{1}{4}$ of 12 = _____ (b) $\frac{1}{3}$ of 15 = _____ (c) $\frac{2}{3}$ of 15 = _____

9. Reduce to lowest terms.

a	b	c	d	e
$\frac{4}{8}$ = _____	$\frac{3}{12}$ = _____	$\frac{5}{15}$ = _____	$\frac{6}{12}$ = _____	$\frac{2}{6}$ = _____

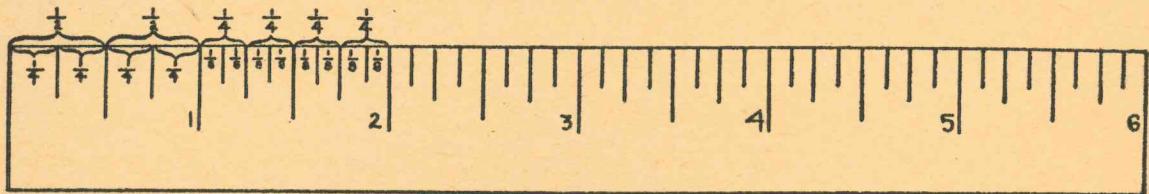
10. Change to whole numbers or mixed numbers.

$\frac{6}{6}$ = _____	$\frac{5}{2}$ = _____	$\frac{10}{2}$ = _____	$\frac{15}{7}$ = _____	$\frac{16}{3}$ = _____
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Remember to write the answers the best way.

11.	$\frac{3}{4}$	$\frac{3}{8}$	$2\frac{5}{6}$	$4\frac{7}{8}$
	$\underline{+ \frac{3}{4}}$	$\underline{+ \frac{5}{8}}$	$\underline{+ 1\frac{1}{6}}$	$\underline{+ 3\frac{5}{8}}$

12.	$\frac{6}{8}$	$4\frac{5}{6}$	$9\frac{3}{4}$	$12\frac{5}{6}$
	$\underline{- \frac{2}{8}}$	$\underline{- 1\frac{5}{6}}$	$\underline{- 1\frac{1}{4}}$	$\underline{- 9\frac{2}{6}}$



Changing Fractions to Higher Terms

The 6-inch ruler above is divided into inches, half inches, quarter inches, and eighth inches.

Can you find the answers to these questions on the ruler?

1. $\frac{1}{2}$ inch = how many fourths of an inch? _____
2. $\frac{1}{2}$ inch = how many eighths of an inch? _____
3. $\frac{1}{4}$ inch = how many eighths of an inch? _____
4. 1 inch = how many fourths of an inch? _____
5. 1 inch = how many eighths of an inch? _____

Mary bought $\frac{1}{2}$ of a pound of nuts and Nellie bought $\frac{1}{4}$ of a pound of nuts. What part of a pound did they have together?

Mary said, "These fractions are not alike. We cannot add them." Mary's mother helped her. She wrote it like this. She said, " $\frac{1}{2}$ and $\frac{1}{4}$ are unlike fractions, for they have different denominators. You cannot add unlike fractions, but you can change them to like fractions and add. I will change $\frac{1}{2}$ to $\frac{2}{4}$. Then I add $\frac{2}{4}$ and $\frac{1}{4}$ and get $\frac{3}{4}$. You and Nellie bought $\frac{3}{4}$ of a pound of nuts."

$$\frac{1}{2} = \frac{2}{4}$$

$$\frac{1}{4} = \frac{1}{4}$$

$$\frac{3}{4}$$

Changing $\frac{1}{2}$ to $\frac{2}{4}$ is called changing a fraction to higher terms.

Use the ruler and change the following fractions to higher terms.

	a	b	c
6.	$\frac{1}{2} = \frac{4}{8}$	$\frac{1}{4} = \frac{2}{8}$	$\frac{1}{2} = \frac{8}{8}$
7.	$\frac{2}{4} = \frac{8}{8}$	$1 = \frac{2}{2}$	$1 = \frac{4}{4}$
8.	$1 = \frac{8}{8}$	$\frac{3}{4} = \frac{6}{8}$	$\frac{4}{4} = \frac{8}{8}$

Changing Fractions to Lower or Higher Terms

To reduce a fraction to lowest terms, divide each term by the largest number that will divide both of them.

Reduce to lowest terms.

a

b

c

d

e

1. $\frac{2}{4} = \underline{\quad}$ $\frac{3}{6} = \underline{\quad}$ $\frac{4}{6} = \underline{\quad}$ $\frac{4}{8} = \underline{\quad}$ $\frac{6}{8} = \underline{\quad}$

2. $\frac{2}{10} = \underline{\quad}$ $\frac{2}{12} = \underline{\quad}$ $\frac{6}{10} = \underline{\quad}$ $\frac{5}{10} = \underline{\quad}$ $\frac{8}{10} = \underline{\quad}$

3. $\frac{3}{12} = \underline{\quad}$ $\frac{6}{12} = \underline{\quad}$ $\frac{10}{12} = \underline{\quad}$ $\frac{4}{16} = \underline{\quad}$ $\frac{4}{12} = \underline{\quad}$

4. $\frac{2}{16} = \underline{\quad}$ $\frac{6}{16} = \underline{\quad}$ $\frac{12}{16} = \underline{\quad}$ $\frac{8}{16} = \underline{\quad}$ $\frac{10}{16} = \underline{\quad}$

To change a fraction to higher terms, multiply both terms by the same number.

To change $\frac{2}{3}$ to sixths you must multiply the denominator by 2 to get sixths. So you must also multiply the numerator by 2. Then $\frac{2}{3} = \frac{4}{6}$.

5. To change halves to fourths I must multiply both terms by _____.
6. To change halves to sixths I must multiply both terms by _____.
7. To change fourths to eighths I must multiply both terms by _____.
8. To change fourths to twelfths I must multiply both terms by _____.
9. Change the following fractions to eighths.

a

b

c

d

$\frac{1}{2} = \underline{\quad}$ $\frac{1}{4} = \underline{\quad}$ $\frac{2}{4} = \underline{\quad}$ $\frac{3}{4} = \underline{\quad}$

10. Change the following fractions to twelfths.

$\frac{1}{2} = \underline{\quad}$ $\frac{2}{3} = \underline{\quad}$ $\frac{3}{4} = \underline{\quad}$ $\frac{5}{6} = \underline{\quad}$

11. Write each missing numerator in the following.

$\frac{1}{4} = \frac{12}{\underline{\quad}}$ $\frac{3}{8} = \frac{16}{\underline{\quad}}$ $\frac{2}{3} = \frac{6}{\underline{\quad}}$ $\frac{3}{8} = \frac{16}{\underline{\quad}}$ $\frac{1}{6} = \frac{18}{\underline{\quad}}$

$\frac{3}{9} = \frac{18}{\underline{\quad}}$ $\frac{5}{6} = \frac{24}{\underline{\quad}}$ $\frac{1}{5} = \frac{10}{\underline{\quad}}$ $\frac{2}{5} = \frac{15}{\underline{\quad}}$ $\frac{7}{8} = \frac{24}{\underline{\quad}}$

Adding Unlike Fractions

Mary bought $\frac{1}{4}$ of a pound of candy and Nellie bought $\frac{1}{8}$ of a pound of candy. What part of a pound did they buy together?

$$\begin{array}{r} \frac{1}{4} = \frac{2}{8} \\ + \frac{1}{8} \\ \hline \frac{3}{8} \end{array}$$

Remember you cannot add unlike fractions. Change $\frac{1}{4}$ to $\frac{2}{8}$ and then add. They bought $\frac{3}{8}$ of a pound of candy.

When two fractions have the same denominator, we say they have a common denominator.

$\frac{1}{4}$ and $\frac{1}{8}$ do not have a common denominator. They cannot be added. $\frac{2}{8}$ and $\frac{1}{8}$ have a common denominator. They can be added.

Add the following fractions. The first one is worked for you.

1.	a $\frac{1}{2} = \frac{2}{4}$ $\frac{1}{4} = \frac{1}{4}$ <hr/> $\frac{3}{4}$	b $\frac{1}{2}$ $\frac{1}{6}$ <hr/> $\frac{1}{3}$	c $\frac{1}{8}$ $\frac{1}{4}$ <hr/> $\frac{3}{8}$	d $\frac{1}{3}$ $\frac{1}{9}$ <hr/> $\frac{4}{9}$	e $\frac{1}{2}$ $\frac{1}{12}$ <hr/> $\frac{1}{6}$
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2.	$\frac{1}{3}$ $\frac{1}{6}$ <hr/> $\frac{1}{2}$	$\frac{2}{9}$ $\frac{1}{3}$ <hr/> $\frac{1}{3}$	$\frac{1}{2}$ $\frac{2}{10}$ <hr/> $\frac{1}{5}$	$\frac{1}{2}$ $\frac{3}{8}$ <hr/> $\frac{7}{16}$	$\frac{2}{5}$ $\frac{3}{10}$ <hr/> $\frac{1}{2}$
----	---	---	--	--	--

3.	$\frac{1}{3}$ $\frac{4}{9}$ <hr/> $\frac{7}{9}$	$\frac{3}{8}$ $\frac{1}{4}$ <hr/> $\frac{1}{2}$	$\frac{3}{5}$ $\frac{3}{10}$ <hr/> $\frac{1}{2}$	$\frac{5}{6}$ $\frac{1}{12}$ <hr/> $\frac{1}{3}$	$\frac{1}{10}$ $\frac{4}{5}$ <hr/> $\frac{1}{2}$
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Finding the Least Common Denominator and Adding Unlike Fractions

Mary bought $\frac{3}{4}$ pound of chocolates and $\frac{2}{3}$ pound of gum drops. How much candy did she buy?

Think. Unlike fractions cannot be added until the denominators have been changed so that they are alike. A good way to find the new denominator, or **least common denominator**, is to multiply the largest of the denominators by 2, 3, 4, 5, and so on, until you get a number that can be divided evenly by all denominators. Four and three are the denominators in this problem.

$4 \times 2 = 8$, but 8 is not evenly divided by 3.

$4 \times 3 = 12$, and 12 is evenly divided by 3, so 12 is the new denominator, or least common denominator.

$$\begin{aligned}\frac{3}{4} &= \frac{9}{12} \\ \frac{2}{3} &= \frac{8}{12} \\ \hline \frac{17}{12} &= 1\frac{5}{12}\end{aligned}$$

$$\begin{array}{r} 1\frac{5}{12} \\ \hline 17 = 17 \div 12 \text{ or } 12 \overline{)17} \\ \underline{12} \\ 5 \\ \hline 12 \end{array}$$

Mary bought $1\frac{5}{12}$ pounds of candy.

Add.

	a	b	c	d
1.	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{5}$	$\frac{2}{3}$
	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
	<u>$\frac{1}{12}$</u>	<u>$\frac{6}{12}$</u>	<u>$\frac{3}{12}$</u>	<u>$\frac{9}{12}$</u>
2.	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{1}{4}$
	$\frac{3}{7}$	$\frac{2}{5}$	$\frac{3}{4}$	$\frac{2}{3}$
	<u>$\frac{1}{14}$</u>	<u>$\frac{10}{14}$</u>	<u>$\frac{15}{14}$</u>	<u>$\frac{7}{14}$</u>
3.	$\frac{3}{5}$	$\frac{5}{6}$	$\frac{3}{5}$	$\frac{5}{6}$
	$\frac{1}{4}$	$\frac{3}{5}$	$\frac{2}{7}$	$\frac{1}{4}$
	<u>$\frac{12}{20}$</u>	<u>$\frac{30}{30}$</u>	<u>$\frac{15}{35}$</u>	<u>$\frac{15}{20}$</u>
4.	$\frac{2}{5}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{7}{8}$
	<u>$\frac{12}{20}$</u>	<u>$\frac{15}{20}$</u>	<u>$\frac{15}{20}$</u>	<u>$\frac{15}{20}$</u>



Subtracting Unlike Fractions

Don's house is $\frac{3}{4}$ of a mile from school and John's house is $\frac{1}{2}$ of a mile from school. How much farther from school is Don's house?

Don said, "That is easy. To find the difference you subtract. The common denominator is 4. I live $\frac{1}{4}$ mile farther from school than John."

$$\begin{array}{r} \frac{3}{4} = \frac{3}{4} \\ - \frac{1}{2} \quad \frac{2}{4} \\ \hline \frac{1}{4} \end{array}$$

Subtract.

	a	b	c	d
1.	$\frac{4}{9}$	$\frac{7}{8}$	$\frac{1}{3}$	$\frac{7}{8}$
	$\underline{\frac{1}{3}}$	$\underline{\frac{3}{4}}$	$\underline{\frac{1}{12}}$	$\underline{\frac{1}{2}}$
2.	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{1}{2}$
	$\underline{\frac{1}{6}}$	$\underline{\frac{5}{8}}$	$\underline{\frac{3}{10}}$	$\underline{\frac{1}{6}}$
3.	$\frac{5}{6}$	$\frac{3}{8}$	$\frac{7}{10}$	$\frac{7}{12}$
	$\underline{\frac{1}{3}}$	$\underline{\frac{1}{4}}$	$\underline{\frac{1}{5}}$	$\underline{\frac{1}{4}}$

Do You Remember?

1. Reduce to lowest terms.

a	b	c	d	e
$\frac{3}{9} =$	$\frac{4}{8} =$	$\frac{4}{16} =$	$\frac{14}{16} =$	$\frac{6}{9} =$

2. Change to whole numbers or mixed numbers.

$\frac{9}{2} =$	$\frac{15}{3} =$	$\frac{11}{3} =$	$\frac{19}{4} =$	$\frac{35}{6} =$
-----------------	------------------	------------------	------------------	------------------

3. Change each fraction to 12ths.

$\frac{1}{2} = \frac{6}{12}$	$\frac{2}{3} =$	$\frac{3}{4} =$	$\frac{5}{6} =$	$\frac{1}{4} =$
------------------------------	-----------------	-----------------	-----------------	-----------------

Unit Test 3

1. Write two unlike fractions. _____

2. Reduce $\frac{10}{12}$ to lowest terms. _____

3. Which is larger, $\frac{2}{3}$ or $\frac{3}{4}$? _____

4. Ruth practiced $\frac{1}{2}$ hour in the morning and $\frac{2}{3}$ hour in the afternoon. How long did she practice? _____

5. To change halves to tenths multiply both terms by _____. _____

6. The least common denominator of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ is _____. _____

7. A club bought $6\frac{1}{2}$ pounds of beef and $8\frac{3}{4}$ pounds of pork to make sandwiches. How much meat did they buy? _____

8. On a trip Tom drove $51\frac{1}{10}$ miles. Tom's father drove $42\frac{1}{2}$ miles. How many more miles did Tom drive than his father? _____

9.
$$\begin{array}{r} 3\frac{5}{8} \\ + 2\frac{3}{8} \\ \hline \end{array}$$

10.
$$\begin{array}{r} 6\frac{5}{6} \\ + 4\frac{5}{6} \\ \hline \end{array}$$

11.
$$\begin{array}{r} 14 \\ - 7\frac{1}{9} \\ \hline \end{array}$$

12.
$$\begin{array}{r} 20\frac{1}{4} \\ - 6\frac{3}{4} \\ \hline \end{array}$$

13.
$$\begin{array}{r} 7 \\ 12 \\ - 3 \\ \hline 12 \end{array}$$

14.
$$\begin{array}{r} 3 \\ 4 \\ - 1 \\ \hline 6 \end{array}$$

15.
$$\begin{array}{r} 4 6\frac{3}{4} \\ - 3 8 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 3 6 \\ - 7\frac{2}{3} \\ \hline \end{array}$$

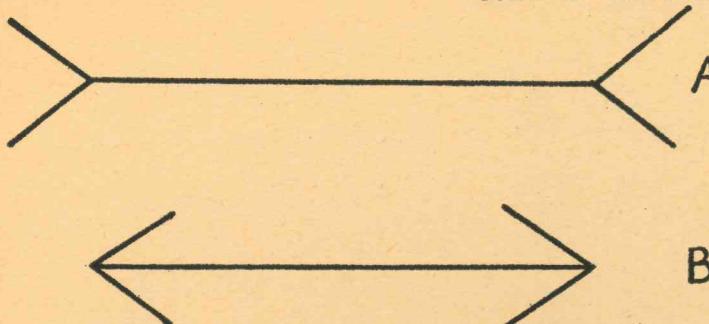
17.
$$\begin{array}{r} 1 6\frac{1}{8} \\ - 4\frac{1}{3} \\ \hline \end{array}$$

18. Write $10\frac{16}{12}$ in its simplest form. _____

19.
$$\frac{2}{3} = \frac{12}{}$$

20.
$$\frac{39}{8} =$$

UNIT 4. MEASURING THINGS

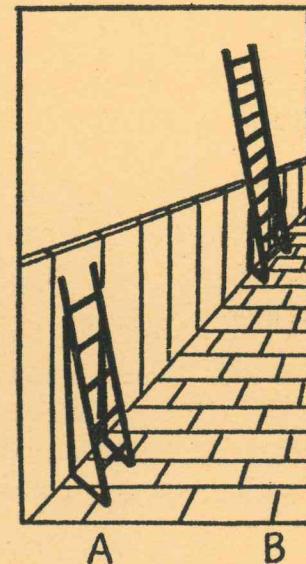


Some Picture Puzzles

Which line is longer, A or B?

Which ladder is taller, A or B?

Are you sure? Measure them with a ruler.



You will use measuring more often than any other part of arithmetic. Have you watched a man keeping time with his stop watch at a race? Can you tell time? Can you read a thermometer? How much gasoline is in the tank? How much do you weigh? How tall are you? Almost everything we use is measured.

Score _____ (33)

Do You Remember?

Fill in the blanks. This is a test on the measures you know.

a

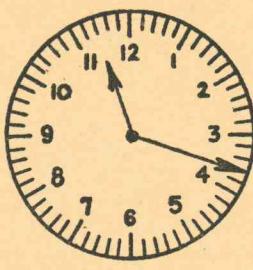
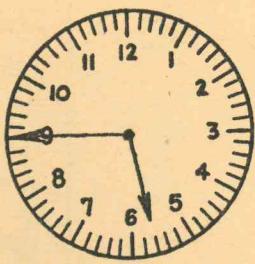
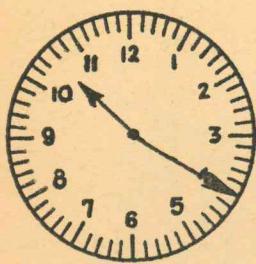
b

c

1. _____ in. = 1 ft.	_____ ft. = 1 yd.	_____ min. = 1 hr.
2. _____ pt. = 1 qt.	_____ qt. = 1 gal.	_____ things = 1 doz.
3. _____ da. = 1 wk.	_____ pk. = 1 bu.	_____ sec. = 1 min.
4. _____ qt. = 1 pk.	_____ oz. = 1 lb.	_____ cups = 1 pt.
5. _____ hr. = 1 da.	_____ lb. = 1 ton	_____ mo. = 1 yr.
6. _____ dimes = \$1	_____ in. = 1 yd.	_____ pennies = 1 dime
7. $\frac{1}{3}$ doz. = _____	$\frac{2}{3}$ hr. = _____ min.	$\frac{1}{2}$ lb. = _____ oz.
8. $\frac{2}{3}$ yd. = _____ ft.	$\frac{1}{4}$ gal. = _____ qt.	$\frac{3}{4}$ yr. = _____ mo.
9. 2 yd. = _____ ft.	8 pk. = _____ bu.	12 qt. = _____ gal.
10. 9 ft. = _____ yd.	$\frac{1}{2}$ hr. = _____ min.	$\frac{1}{2}$ qt. = _____ pt.
11. 24 in. = _____ ft.	$\frac{3}{4}$ doz. = _____ things	$1\frac{1}{2}$ qt. = _____ pt.

Measuring Time

Score _____ (15)



60 sec. = 1 min.
60 min. = 1 hr.
24 hr. = 1 da.
7 da. = 1 wk.
52 wk. = 1 yr.
12 mo. = 1 yr.
365 da. = 1 yr.
366 da. = 1 leap yr.

Susan said, "The time on the first clock is 20 minutes after 10."

Jane said, "It is easier to say *ten twenty* and write it like this, 10:20."

The time on the second clock is 5:45. The time on the third clock is 11:18.

Write these times the easy way.

a

1. 20 min. after 6 _____

10 min. to 7 _____

c

22 min. after 12 _____

2. 8 min. to 9 _____

half past 4 _____

25 min. to 3 _____

3. Find the number of hours from 7 a.m. to

11 a.m. _____

4. Find the number of hours from 11 a.m.

to 2 p.m. _____

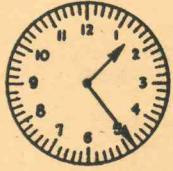
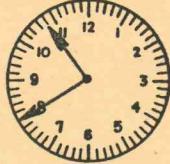
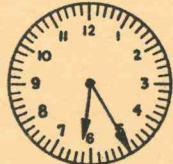
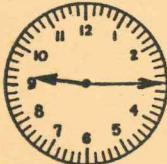
5. Mary practiced her piano lesson 45 minutes on Monday, 40 minutes Tuesday, 30 minutes Wednesday, and 35 minutes Friday. How many hours did she practice

in all? _____

6. Tom worked from 9 to 11:30. How many

hours did he work? _____

7. Write the time the easy way below each clock.



If you will learn this verse, you can remember how many days in each month:

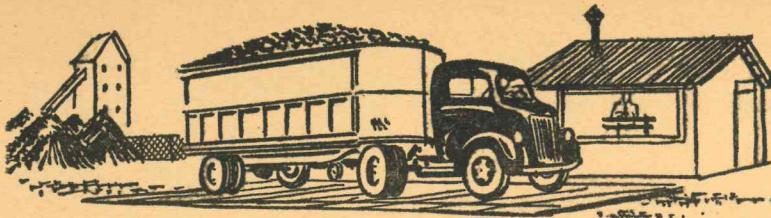
Thirty days hath September,

April, June, and November.

All the rest have thirty-one

But February, which has 28

'Til leap year gives it 29.



Score _____ (16)

16 ounces (oz.) = 1 pound (lb.)
2000 pounds (lb.) = 1 ton (T.)

Measuring Weight

1. Mr. Brown bought 8 tons of coal for \$16.20 a ton. How much did the coal cost him? _____

2. How many pounds of coal did Mr. Brown buy? _____

3. The driver delivered 8,640 pounds on the first load. How many pounds were left to be delivered? _____

4. Mrs. Brown sold 9 pounds of butter for \$.72 a pound. How much did she receive for it? _____

5. Dried beef is \$1.20 a pound. How much will 8 ounces cost? _____

6. Mrs. White bought $\frac{1}{4}$ pound of nut meats at 80¢ a pound. She gave the clerk 50¢. How much change should she receive? _____

7. At 60¢ a pound, what will 4 ounces cost? _____

8. Mr. Brown bought a load of shelled corn to feed his hogs. The corn weighed 5,040 pounds. Shelled corn weighs 56 pounds to the bushel. How many bushels did he buy? _____

Supply the missing numbers.

9. 3 lb. = _____ oz.

10 tons = _____ lb.

10. $\frac{1}{8}$ lb. = _____ oz.

$\frac{1}{4}$ ton = _____ lb.

11. $\frac{1}{3}$ da. = _____ hr.

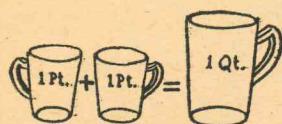
$\frac{1}{6}$ year = _____ da.

12. 25 min. = _____ sec.

9 hr. = _____ min.

Two Kinds of Pints and Quarts

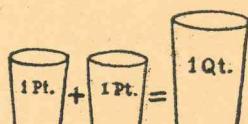
Liquid Measure



$$2 \text{ pints} = 1 \text{ quart (qt.)}$$

$$\begin{array}{ll} 2 \text{ cups} = 1 \text{ pt.} & 2 \text{ pt.} = 1 \text{ qt.} \\ 2 \text{ pt.} = 1 \text{ qt.} & 8 \text{ qt.} = 1 \text{ pk.} \\ 4 \text{ qt.} = 1 \text{ gal.} & 4 \text{ pk.} = 1 \text{ bu.} \end{array}$$

Dry Measure



$$2 \text{ pints} = 1 \text{ quart}$$

Liquids like water, milk, and oil are measured in a smaller kind of pint and quart than grains, fruits, and vegetables. This is because a quart of milk fills all the space in the measure, while in a quart of berries there is space between the berries that is not filled.

The measure used to measure liquids is called **liquid measure**. The measure used to measure grains, fruits, and vegetables is called **dry measure**.

1. Harry picked a peck of sweet cherries. He sold them in pint boxes. How many boxes

did he sell? _____

2. Harry sold the cherries for 18¢ a box.

How much did he get for them? _____

3. If there are 2 glasses of milk in a pint, how many quarts of milk are needed for the fifth grade so that each may have 1 glass? There are 40 children in the fifth grade.

4. Mr. Brown picked 48 bushels of tomatoes. He sold them in peck baskets. How

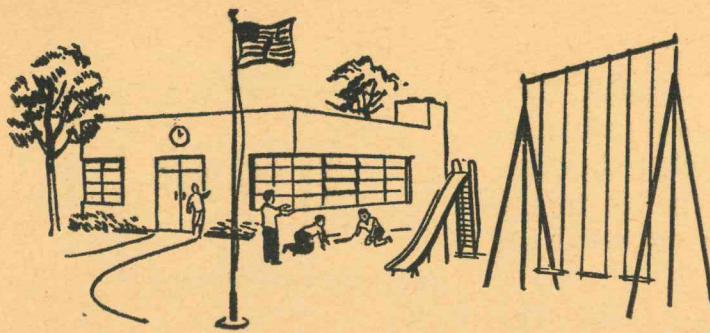
many baskets did he sell? _____

a

b

c

5. 1 pk. = _____ qt.	1 gal. = _____ qt.	1 bu. = _____ qt.
6. 6 pk. = _____ qt.	4 bu. = _____ qt.	$\frac{1}{2}$ pk. = _____ qt.
7. $\frac{3}{4}$ gal. = _____ qt.	16 pk. = _____ bu.	10 gal. = _____ qt.
8. 2 pk. = _____ bu.	1 gal. = _____ pt.	72 qt. = _____ bu.
9. To change quarts to bushels I divide by _____.		
10. To change gallons to pints I multiply by _____.		
11. To change bushels to pecks I multiply by _____.		



Score _____ (19)

12 inches (in.) = 1 foot (ft.)

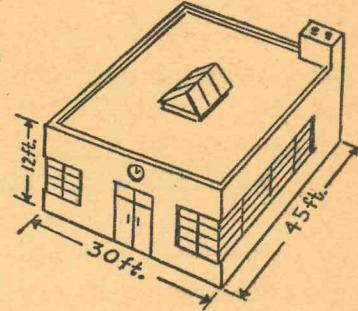
3 feet (ft.) = 1 yard (yd.)

16 $\frac{1}{2}$ feet = 1 rod (rd.)

5,280 feet or 320 rods = 1 mile (mi.)

Measuring Length, Width, and Height

The boys measured the schoolhouse. They used a foot ruler. They measured the front first. It was 30 feet in width. They measured the east side. It was 45 feet in length. They measured its height. It was 12 feet high. The length, width, and height are called **dimensions**.



1. What is the length of the west side of the schoolhouse? _____ ft.
2. What is the width of the back of the schoolhouse? _____ ft.
3. What is the distance around the schoolhouse? _____ ft.
4. Would it be easier to measure the schoolhouse with a yard measure? _____
5. How many yards wide is the schoolhouse? _____
6. How many yards long is it? _____
7. How many yards is it around the schoolhouse? _____

Write whole numbers or fractions in the blank spaces.

8. $\frac{1}{2}$ ft. = _____ in. $\frac{1}{3}$ yd. = _____ ft. $\frac{1}{4}$ mi. = _____ rd.
9. $\frac{3}{4}$ yd. = _____ in. $\frac{1}{2}$ mi. = _____ ft. $\frac{1}{10}$ mi. = _____ rd.
10. 9 in. = _____ ft. 2 ft. = _____ yd. 18 in. = _____ yd.
11. 6 ft. = _____ in. $1\frac{1}{2}$ ft. = _____ in. 96 in. = _____ ft.

Do You Remember?

Score _____ (4)

a

$$\begin{array}{r} 1 \ 6\frac{3}{4} \\ + 1 \ 7\frac{5}{8} \\ \hline \end{array}$$

b

$$\begin{array}{r} 4 \ 4 \\ - 5\frac{3}{8} \\ \hline \end{array}$$

c

$$\begin{array}{r} 1 \ 6\frac{1}{3} \\ - 9\frac{2}{9} \\ \hline \end{array}$$

d

$$\begin{array}{r} 1 \ 5\frac{1}{2} \\ - 1 \ 4\frac{7}{12} \\ \hline \end{array}$$

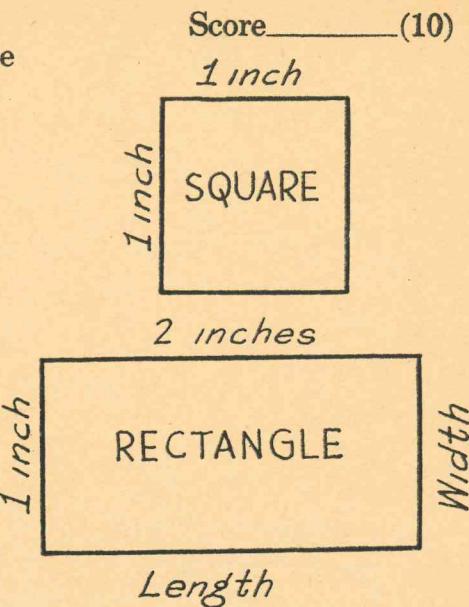
The Square and Rectangle

Score _____ (10)

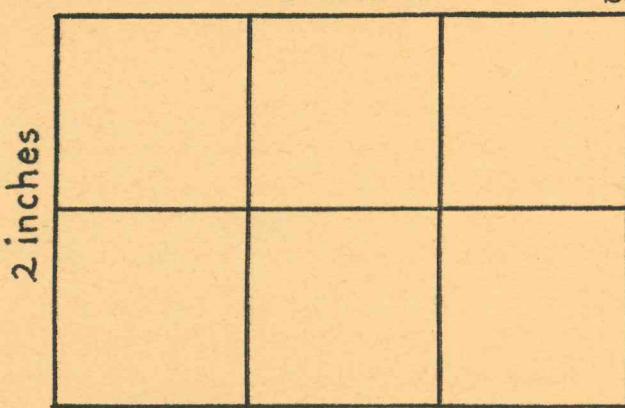
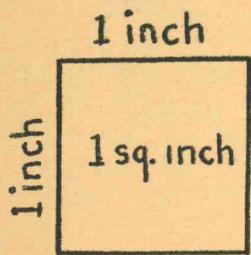
Look carefully at the figures to the right. Both have square corners. The sides of the square are all equal, but in the rectangle two sides are longer than the other two. The longer side of the rectangle is the length and the shorter side is its width. The length and width are called the dimensions of the rectangle.

The length and width of a square are equal. The distance around a square or rectangle is its perimeter.

1. Find the perimeter of the square.
2. Find the perimeter of the rectangle.
3. A baseball diamond is a square 90 feet on a side. What is its perimeter? _____
4. Mrs. Smith's flower garden is 30 feet long and 10 feet wide. How many feet of wire fence does she need to go around it? _____
5. Mrs. White's flower garden is a square $30\frac{1}{2}$ feet on a side. How many feet of wire fence does she need to go around it? _____
6. How much wallpaper border is needed to go around a room $20\frac{1}{4}$ feet long and $12\frac{1}{4}$ feet wide? _____
7. A city lot is $3\frac{1}{2}$ rods wide and 8 rods long. Find its perimeter. _____
8. Find the perimeter of a square $14\frac{2}{3}$ feet on a side. _____
9. Mr. Brown wishes to fence in a field that is 20 rods by 80 rods. How much will the fence cost at \$2.20 a rod? _____
10. The dimensions of a rectangle are 16 ft. and $25\frac{1}{2}$ ft. Find its perimeter. _____



3 inches

Score (9)

Finding the Area of a Square or Rectangle

The square above is 1 inch on each side. The surface inside the square is called its **area**. Its area is 1 square inch.

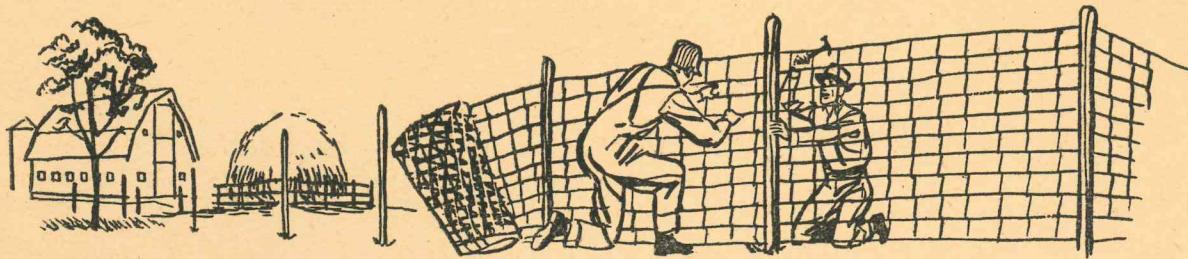
The rectangle above is 3 inches long and 2 inches wide. We say the rectangle is 3 in. by 2 in., or 3 in. \times 2 in. We can divide the rectangle into square inches. How many are there? There are 3 squares in each row and there are two rows. We can say $3 \times 2 = 6$. The area of the rectangle is 6 square inches.

To find the area of a rectangle multiply its length by its width.

A square is a rectangle with its length the same as its width.

Find the area of each of the following. Remember that when you find an area your answer is always in **square measure**.

Area	
1. Paper 7 in. by 12 in. = $7 \times 12 = 84$ sq. in.	1. 84 sq. in.
2. Floor 20 ft. by 40 ft.	2. _____
3. Cloth 12 in. by 12 in.	3. _____
4. Walk 3 ft. by 25 ft.	4. _____
5. Glass 2 ft. by 7 ft.	5. _____
6. Garden 12 rd. by 4 rd.	6. _____
7. Desk 4 ft. by 3 ft.	7. _____
8. Table 3 ft. square	8. _____
9. Lawn 20 rd. by 30 rd.	9. _____
10. Roof 23 ft. by 20 ft.	10. _____



Using Perimeters and Areas

1. Mr. Brown is building a fence around a square field that is 40 rods on a side. Find the

cost of the fence at \$1.75 a rod._____

2. Gordon's father is having a new cement walk built in front of his house. It is 20 yards long and 1 yard wide. How much does it cost

at \$2.25 a square yard?_____

3. Mrs. Brown wishes to carpet a bedroom. It is 4 yards by 3 yards. How much will the carpet cost at \$2.25 a square yard?

4. Mr. Scott's new cement driveway is to be 2 yards wide and 12 yards long. How much will it cost at \$1.75 a square yard?

5. Mary's father is going to prepare a flower garden for her. It is to be 12 feet by 25 feet. She wants wire fence around it. The fence costs 12¢ a foot. How much will it

cost?_____

6. Mary finds that the fertilizer for her garden will cost about \$.75 for each 100 square feet. How much will the fertilizer cost

for the garden?_____

7. Mr. Scott wishes to put new sod on his front lawn. It is 10 yards by 20 yards. How much will it cost him at \$.55 a square yard?

8. A room is 16 feet long and 14 feet wide. How much will border cost to go around it

if it costs 8 cents a foot?_____

Adding and Subtracting Feet and Inches

Mary has two pieces of ribbon. One piece is 2 feet 8 inches long and the other one is 1 foot 6 inches long. How much ribbon does Mary have in all?

$$\begin{array}{r}
 2 \text{ ft. } 8 \text{ in.} \\
 1 \text{ ft. } 6 \text{ in.} \\
 \hline
 3 \text{ ft. } 14 \text{ in.} = \\
 \end{array}$$

Write 1 ft. under 2 ft. and 6 in. under 8 in.

$$4 \text{ ft. } 2 \text{ in.}$$

Add and get 3 ft. and 14 inches.

But 14 inches = 1 ft. 2 in.

So 3 ft. 14 in. = 4 ft. 2 in.

Add.

	a	b	c	d
1.	3 ft. 7 in. <u>2 ft. 10 in.</u>	1 ft. 9 in. <u>8 in.</u>	2 ft. 3 in. <u>4 ft. 8 in.</u>	7 ft. <u>3 ft. 11 in.</u>
2.	7 ft. 3 in. <u>4 ft. 9 in.</u>	5 ft. 5 in. <u>1 ft. 10 in.</u>	1 ft. 9 in. <u>1 ft. 11 in.</u>	7 ft. 8 in. <u>6 ft. 3 in.</u>
3.	5 ft. 4 in. <u>7 ft. 8 in.</u>	9 ft. 11 in. <u>10 in.</u>	15 ft. 3 in. <u>9 in.</u>	9 ft. 11 in. <u>9 ft. 11 in.</u>

Mr. Brown is 6 feet tall. Mrs. Brown is 5 feet 5 inches tall. How much taller is Mr. Brown?

$$\begin{array}{r}
 6 \text{ ft. } = 5 \text{ ft. } 12 \text{ in.} \\
 5 \text{ ft. } 5 \text{ in. } = 5 \text{ ft. } 5 \text{ in.} \\
 \hline
 \end{array}$$

$$7 \text{ in.}$$

You cannot subtract 5 inches from 0 inches so you change 6 ft. to 5 ft. 12 in. Then you can subtract.

Subtract.

	a	b	c
4.	3 ft. 4 in. <u>2 ft. 3 in.</u>	8 ft. <u>5 ft. 2 in.</u>	10 ft. 2 in. = 9 ft. 14 in. <u>4 ft. 7 in. = 4 ft. 7 in.</u>
5.	7 ft. 7 in. <u>1 ft. 10 in.</u>	15 ft. <u>4 ft. 1 in.</u>	1 ft. 4 in. <u>10 in.</u>
6.	8 ft. 10 in. <u>6 ft. 8 in.</u>	19 ft. <u>1 ft. 2 in.</u>	1 ft. 2 in. <u>9 in.</u>

Unit Test 4

Fill each blank with the right whole number or fraction.

1. 1 ft. = _____ in.

6. $\frac{3}{4}$ yr. = _____ mo.

2. 2 qt. = _____ pt.

7. 1 ton = _____ lb.

3. 1 da. = _____ hr.

8. 24 pk. = _____ bu.

4. 30 min. = _____ hr.

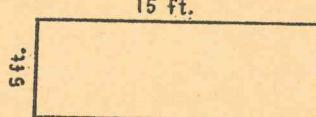
9. $\frac{2}{3}$ doz. = _____

5. $\frac{1}{2}$ lb. = _____ oz.

10. 4 gal. = _____ qt.

11. Find the area of the rectangle.

12. Find the perimeter of the rectangle.



13. At 80¢ a pound, what will 8 oz. cost?

14. How many 9-inch badges can Mary cut from 2 yards of ribbon? _____

15. Change 82 ft. to yards. _____

16. Find the cost of 8 tons of coal at \$16.85 a ton. _____

17. To change pk. to bu. divide by _____

18. Find the sum.

4 ft. 6 in.

9 ft. 8 in.

19. Find the difference.

10 ft. 4 in.

3 ft. 7 in.

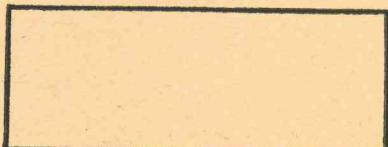
20.

Find the perimeter of the rectangle. _____

Find the area of the rectangle. _____

48 rd.

18 rd.



UNIT 5. DECIMALS



Two Ways of Showing Parts of Things

The fifth grade arithmetic lesson was about money and money problems. John told the children about the quarter. He asked them why it was called a quarter. Judy said, "Its whole name is quarter dollar because it is $\frac{1}{4}$ of a dollar." Judy wrote it on the board. John said, "It is also called twenty-five cents." Judy wrote \$.25. Is 25 cents $\frac{25}{100}$ of a dollar?

Fill the blank spaces with numbers. The first one is worked for you.

1. A penny = $\frac{1}{100}$ of a dollar = \$.01
2. A nickel = $\frac{5}{100}$ of a dollar = _____
3. A dime = $\frac{10}{100}$ of a dollar = _____
4. A quarter = $\frac{25}{100}$ of a dollar = _____
5. A half-dollar = $\frac{50}{100}$ of a dollar = _____

Write the following using the dollar sign and the cents point.

6. Three dollars and twenty-five cents. _____
7. Ten dollars and seventy cents. _____
8. One hundred dollars and ten cents. _____
9. In writing the amounts what did you write for the *and*? _____
10.
$$\begin{array}{r} \$3\ 9.8\ 7 \\ +1\ 4.9\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} \$1\ 0.0\ 0 \\ -4.9\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} \$1\ 6.0\ 4 \\ \times 9 \\ \hline \end{array}$$

$$1\ 2)\$3\ 8.4\ 0$$

Write in words.

11. \$3.71 _____
12. \$6.10 _____
13. \$10.48 _____

Working Money Problems

When you solve money problems you are using decimals. We will give the cents point a new name. We will call it the **decimal point**. It separates the dollars from the parts of a dollar. We read the decimal point *and*. We read \$3.50, "three dollars *and* 50 cents." The 50 cents is $\frac{50}{100}$ of a dollar, or .50 of a dollar.

Solve the following. Be sure to write the dollar sign and decimal point.

1. Tom sold papers and earned \$2.80 one week, \$1.50 the second, \$3.10 the third, and \$2.50 the next. How much did he earn that

month? _____

2. The Browns went on a trip to the mountains. Their expenses for the five days were \$10.95, \$17.80, \$14.75, \$13.68, and \$20.25. How much were their expenses in all?

3. Find the sum of \$3.75, \$.64, \$6.14, and \$9.36. _____

4. Gordon examined 2 bicycles in a store. One cost \$37.50 and the other \$42.75. What was the difference in the price? _____

5. Mary has 87 cents. How much more must she have to get a doll that costs \$2.75?

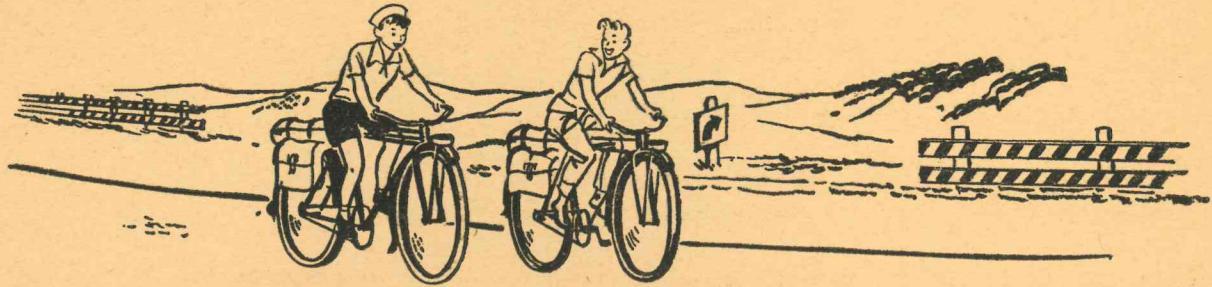
6. Find the difference between \$18.75 and \$26.43. _____

7. Subtract \$26.83 from \$100. _____

8. If you had \$6.07 and spent \$4.70, how much would you have left? _____

9. $\$9 - \$3.45 = ?$ _____

10. Tom is saving his money to buy a bicycle. He has saved \$17.85. The bicycle he wants costs \$39.50. How much more money does he need to buy it? _____



Adding Decimals

Tom and Richard have new bicycles with speedometers on them. A speedometer tells the distance in miles and tenths of miles.

The first morning Tom rode his bicycle 3.6 miles. In the afternoon he rode it 7.8 miles. How far did he ride it that day?

$$\begin{array}{r}
 3.6 \\
 7.8 \\
 \hline
 11.4
 \end{array}$$

Tom added it just like adding whole numbers and put the decimal point in the sum directly under the other decimal points.

1. The first week Tom rode his bicycle 30.4 miles. Richard rode his bicycle 31.9 miles. How far did they

both ride? _____

2. One day the boys rode their bicycles to Gull Lake. They went by one road and came back by another road. The distance going was 16.3 miles and the distance home was 21.8 miles. How many miles was the trip?

Add. Be sure to keep the decimal points directly under each other.

	a	b	c	d	e	f	g
3.	.4	6.8	1.3	4.2	3.8	3.6	8.4
	<u>.3</u>	<u>1.7</u>	<u>4.6</u>	<u>1.9</u>	<u>.7</u>	<u>2.2</u>	<u>4.3</u>
4.	.5	.9	5.8	8.5	7.9	9.4	8.7
	<u>.4</u>	<u>.1</u>	<u>6.3</u>	<u>7.6</u>	<u>1 8.4</u>	<u>8.0</u>	<u>.5</u>
5.	3.1	1 2.7	7 4.3	3 8.4	1 7.6	1 9.0	1 2 3.9
	4.2	3 6.0	1 4.7	7 8.8	3 4.1	2 7.1	1 2 9.4
	6.9	2 1.6	.9	1 5.0	3 7.5	.9	1 8 6.6

6. Which is greater: $\frac{1}{2}$ or .6? _____

7. $1.2 + 2.1 + 3.6 =$ _____

Score _____ (35)

Subtracting Decimals

One day Tom rode his bicycle 4.3 miles and Richard rode his bicycle 3.9 miles. How much farther did Tom ride?

$$\begin{array}{r} 4.3 \\ 3.9 \\ \hline .4 \end{array}$$

Richard subtracted. He remembered to put the decimal points directly under each other. Tom rode .4 of a mile farther than Richard.

Subtract.

	a	b	c	d	e	f	g
1.	.9	.7	7.3	1 7.4	5.7	1.4	3.6
	<u>.4</u>	<u>.2</u>	<u>4.6</u>	<u>3.4</u>	<u>5.1</u>	<u>.8</u>	<u>1.9</u>
2.	5.4	3 7.1	1 8.2	7.9	6.3	1 0.9	4 3.0
	<u>3.8</u>	<u>6.7</u>	<u>8.7</u>	<u>7.5</u>	<u>3.4</u>	<u>1.8</u>	<u>1 4.8</u>
3.	2 1.6	1 5.7	1 9 5.6	7 1 0.3	8 3 9.0	5 9 2.3	1 0 0.6
	<u>1 6.7</u>	<u>8.8</u>	<u>9 9.8</u>	<u>3 7 4.8</u>	<u>6 3.9</u>	<u>4 9 2.4</u>	<u>3 6.9</u>
4.	1 4.5	1 1 7.2	1 8 4.1	1 2 6.5	8 0 9.2	6 5 5.2	1 0 2.5
	<u>9.3</u>	<u>4 1.9</u>	<u>9 7.6</u>	<u>3 6.7</u>	<u>2 5 4.8</u>	<u>1 8 3.5</u>	<u>1 9.9</u>
5.	1 7 2.5	1 6 6.9	1 0 6.0	7 9 1.0	6 8 5.4	3 7 3.4	1 2 2.2
	<u>8 5.6</u>	<u>7 0.7</u>	<u>1 7.4</u>	<u>5 6 3.2</u>	<u>1 6.7</u>	<u>2 6.5</u>	<u>5 8.3</u>

Score _____ (11)

Writing Decimals

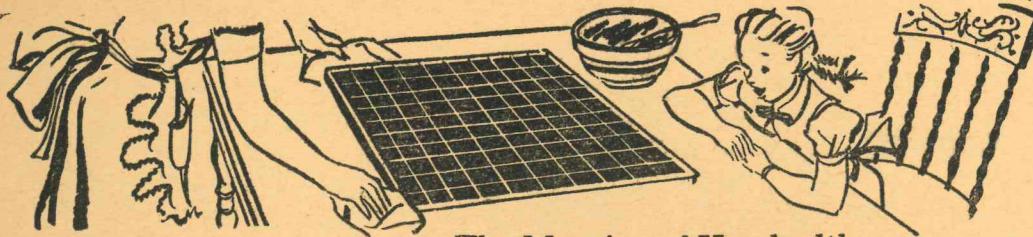
Three and four tenths = 3.4

Remember in writing decimals to put the decimal point in place of *and*.
Write as decimals.

	a	b
1.	Six and nine tenths _____	Fifteen and one tenth _____
2.	Twenty and three tenths _____	One and two tenths _____
3.	Seven tenths _____	Sixty and eight tenths _____

Write the following in words.

4.	1.2 One and two tenths	.9 _____
5.	3.1 _____	6.4 _____
6.	7.7 _____	10.6 _____



The Meaning of Hundredths

Sally's mother made her a large pan of fudge to take to school on her birthday. She cut the fudge into 100 pieces. She told Sally that there would be about 3 pieces for each one.

One piece is $\frac{1}{100}$ or .01 of the fudge and 3 pieces is $\frac{3}{100}$ or .03 of all the fudge.

When you write dollars and cents, like \$3.28, you are using hundredths. There are 100 cents in one dollar. So 28 cents equals $\frac{28}{100}$ or .28 of a dollar.

When there is one figure after a decimal point, the decimal shows tenths. .3, .4, .8, and 3.7 show tenths.

When there are two figures after the decimal point, the decimal shows hundredths. .25, .46, and 3.40 show hundredths.

$3\frac{25}{100}$ is a mixed number and 3.25 is a mixed decimal. They are read the same, three and twenty-five hundredths. You must remember to say *and* between the whole number and the fraction. What goes in place of *and* when you write the number as a mixed decimal?

Write the following as decimals.

a

b

c

d

e

1. $\frac{3}{100} = .03$ $\frac{6}{100} = \underline{\hspace{2cm}}$ $\frac{27}{100} = \underline{\hspace{2cm}}$ $\frac{50}{100} = \underline{\hspace{2cm}}$ $\frac{95}{100} = \underline{\hspace{2cm}}$

Write the following as mixed decimals.

2. $2\frac{5}{100} = 2.05$ $3\frac{6}{100} = \underline{\hspace{2cm}}$ $4\frac{20}{100} = \underline{\hspace{2cm}}$ $8\frac{50}{100} = \underline{\hspace{2cm}}$

3. Write twenty-five hundredths two ways.

4. Write ten and four hundredths two ways.

5. $\frac{4}{10} = \frac{40}{100}$. Does $.4 = .40$?

6. $\frac{1}{10} = \frac{10}{100}$. Does $.1 = .10$?

Unit Test 5

1. Copy and add.
\$7.40, \$.65, \$.07, \$3, \$16.95 _____
2. Copy and add.
.07, 1.36, 7.38, 14.75 _____
3. Write 4.7 as a mixed number. _____
4. Write $3\frac{4}{10}$ as a decimal. _____
5. John spent \$2.25 for a cap and \$4.65 for a coat. He gave the clerk \$10. How much change did he receive?

6. On Monday 1.47 inches of rain fell; on Tuesday, 1.08 inches; and on Wednesday, 1.38 inches. What was the average rainfall?

7. Mary is 54.4 inches tall. Tom is 63.3 inches tall.
How much taller is Tom than Mary?

8. Write nine and fifty-four hundredths as a decimal.

9. How much will 765 books cost at \$3.50 each?

10. $4.62 - 3.12 =$ _____
11. $100.02 - .82 =$ _____
12. From \$100 take \$75.50.

13. Divide \$25.50 equally among 5 boys.

14.

9.8	15.	2 4.6	16. 1 2 5.1 6	17. 7 8.9 4
4.8		1 3.5	9 0.4 8	8 6.5 1
8.5		2 6.9	9.5 9	2 7.6 2
<u>1.2</u>		<u>4 0.3</u>	<u>1 2 7.0 0</u>	<u>1 4.0 7</u>
18.

1 3 7.0	19. 1 0 0.4 9	20. 9 2 7.6 1
<u>1 1 0.6</u>	<u>8 6.5 9</u>	<u>1 8 9.8 7</u>

ANSWERS

Page 3. 1. 5,459 2. 10,747 3. 124,904 4. 30,504 5. 104,016 6. 20 7. 400 8. 9,000 9. 100,000 10. 8

Page 4. 1. 65 2. 45 3. 108 4. 15 hr. 5. 62 6. \$66.70 7. 15;18;15;19;67

Page 5. 1. 14;13;16;15;17;7;14;13;13;15 2. 12;16;12;14;17;9;15;11;13;15 3. 18;17;19;14;17;18;20;22;19 4. 92;73;96;84;83;84;183;175 5. 166;207;198;2,212;1,301;1,529;1,690;1,944 6. \$14.45; \$8.80; \$24.65; \$111.53; \$109.73; \$17.45; \$1,512.98 7. 8;18;38;78 8. 12;32;62;92 9. 16;46;56;76 10. 11;21;41;81

Page 6. 1. 938 ft. 2. Empire State; 55 stories 3. 1,250 ft. 4. Saturday; 1,813 5. \$2.75 6. Mary; 50¢ 7. Gene; 10" 8. Going home; \$6.15

Page 7. 1. 9;7;8;4;5;9;5;9;6;8 2. 9;6;5;4;7;9;8;9;7;7 3. 3;8;5;7;6;7;8;9;8;9 4. 39;56;76;29;33;53;49 5. 793; 577;650;440;640;486;581;52;224 6. \$1.33; \$5.01; \$8.82; \$1.80; \$2.61; \$7.4; \$8.85; \$2.33 7. \$1.25 8. 89¢ 9. \$3.75 10. \$6.62 11. \$1.64 12. \$5.48

Page 8. 1. 33 2. 21 in. 3. 51 4. 52 5. 30 6. \$2.80 7. \$1.25 8. 3 in. 9. 350 10. Mt. McKinley; 6,190 11. add 12. subtract 13. add 14. add 15. subtract

Page 9. 1. \$43.50 2. 54 3. \$62.00 4. \$1.08 5. 150 6. 100 7. 56 8. 48 9. \$3.15

Page 10. 1. 32;35;42;45;42;0;81;14;32;36 2. 48;56;63; 21;54;64;63;30;56;72 3. 33;26;66;44 4. 58;39;84;20 5. 26; 5;51;77 6. 31;72;26;38 1. 612;259;324;306;448;315;245; 184 2. 1,404;4,265;3,056;1,972;3,792;2,128;1,068;7,896 3. 540;360;490;4,824;2,163;2,781;5,400;7,240

Page 11. 1. 8 2. 5 3. 9 qts. 4. 17¢ 5. 45¢ 6. 4 7. 6 1. 7;3;5;9;0;7;5;9 2. 7;5;9;4;1;4;9;2 3. 6;6;5;8;9;8;7;9 4. 8;8;8;9;6;0;1;2

Page 12. 1. 231;212;122;431;111 2. 31;92;41;81;42 3. 174;135;138;236;124 4. 425;473;657;937;516;535 5. 290; 250;420;350;430 6. 802;607;501;906;801;807

Page 13. 1. 82, r 5;436, r 2;429, r 1 2. 572, r 3;225, r 1; 183, r 7 3. 998, r 8; 483, r 3;1,636, r 1

Page 14. 1. 51¢ 2. 70 3. 12 4. 200 5. 3 6. 8 7. \$1.35 8. \$2.70 9. 82 10. 7 11. 17¢ 12. 273 13. \$5.20

Page 15. 1. 201,602 2. Three hundred forty-five thousand and sixty 3. \$7.75 4. 7 lb. 5. \$2.25 6. 9¢ 7. 49¢ 8. 178 9. 2,005 10. \$52.16 11. 22 12. 474 13. 137 14. 6,471 15. 301 16. 1,458 17. 6,372 18. 24, r 2 19. 708 20. 230

Page 16. 1. 3;2;6;3;2;3;2 2. 3;7;2;2;2;3;9 3. 8;2;2;3;2; 3;5 4. 3;2;2;3;2;2;9 5. 3;2;4;8;2;4;2

Page 17. 1. 4;6;5;7;6;4 2. 5;8;8;8;9;6 3. 9;7;9;6;8;6 4. 6;9;6;8;7;8 5. 7;9;7;8;6;5

Page 18. 1. 2, r 3;6, r 7;2, r 4;3, r 1;2, r 1 2. 3, r 2;2, r 5;2, r 2;2, r 1;2, r 1 3. 2, r 5;6, r 2;5, r 4;3, r 4;3, r 2;4, r 4 4. 4, r 8;3, r 4;3, r 3;3, r 4;4, r 8;3, r 8 5. 4, r 5;6, r 3;5, r 3;7, r 5;6, r 7;4, r 6 6. 5, r 9;5, r 2;6, r 6;8, r 3;6, r 7;6, r 1

Page 19. 1. 8;9;8;9 2. 9;6;8;9 3. 7;8;6;8 4. 9;8;7;7 5. 6;8;7;5 6. 6;6;9;8;7 7. 6, r 1;7, r 3;9, r 5;5, r 8

Page 20. 1. 32;24;23;42;23 2. 34;17;15;13;11 3. 32;13; 52;53;27 4. 54, r 16;41, r 4;33, r 12;71, r 7

Page 21. 2. 5 + 2;22 + 4 3. 9 + 3;30 + 9 4. 48;18;25;32; 61 5. 38;19;16;41;61 6. 12, r 17;29, r 46;74, r 22;81, r 23; 98, r 7

Page 22. 1. 19;56;42;31;45 2. 16;8;31;37;98 3. 18, r 2; 41, r 3;35, r 7;75, r 15;82, r 83

Page 23. 1. 72;210;378;729 2. 296;172;468;243 3. 688; 273;567;318 4. 405;855;336;574 5. 360;120;469;324 6. 4;4;5;5 7. 2;4;8;3 8. 6;4;4;5 9. 51;36;96;72;36

Page 24. 1. 174;641 2. 436;645;276 3. 821;911;789 4. 539, r 11;873, r 6

Page 25. 1. 80;90;80;120;700 2. 40;40;90;500;80 3. 40, r 1;90, r 8;100, r 1;110, r 4;140, r 5

Page 26. 1. 607;803;902;902;801 2. 104;209;406;207; 201 3. 800, r 8;701, r 1;209, r 4;608, r 6;309, r 20 4. 407, r 10;108, r 15;702, r 6;900, r 1;100, r 6

Page 27. 1. \$1.75 2. \$1.85 3. \$.30; \$.61; \$.76; \$.1.72 4. \$2.40; \$.26; \$.1.34; \$.79. \$120.84; \$222.00; \$482.40; \$10,420.30; \$7,858.50

Page 28. 1. 27¢ 2. \$2.25 3. \$3.75 4. 840 lb. 5. 20¢ 6. 5;15 7. 4 8. \$52.50 9. 315 10. \$34.20

Page 29. 1. 28 min. 2. \$3.50 3. 5 mi. 4. 89 lb. 5. 32 6. 39" 7. 92 8. 38 9. 358 mi.

Page 30. 1. quotient 2. 9, r 1 3. 4, r 3 4. 85 5. 610 6. add; 5 7. 8 8. 60 9. 22, r 2 10. 104 11. 12 12. 8 13. 89 14. 402 15. 104 16. 67 17. 34 18. 204 19. 93 20. 551

Page 31. 1. 2 2. 1 3. 3 4. 2 5. 2 6. 2;6;3 7. 1;1;2 8. 4;3;1 9. 2;2;1 10. 12;4;1 11. 8;3;5

Page 32. 1. We are talking about 2 of the equal parts. Something was divided into 3 equal parts. 2. We are talking about 1 of the equal parts. Something was divided into 2 equal parts. 3. We are talking about 5 of the equal parts. Something was divided into 6 equal parts. 4. We are talking about 3 of the equal parts. Something was divided into 8 equal parts. 5. 2/5 6. 2/8 7. 2/8;6/8 8. 4 9. 1/2;2/3;2/4;3/5

Page 33. 1. 1/2;1/3;1/4 2. 1/2;1/5;1/2;2/3 3. 4/5; 1/3;1/2;3/4 4. 1/2;3/4;1/4;5/6 5. 3;8;9 6. 7;6;7;5 1. 2, r 1;4, r 1;1, r 3;2, r 1;2, r 1;3, r 3 2. 1, r 4;8, r 1;3, r 1;3, r 1;3, r 3;1, r 3

Page 34. 1. 3;1 1/2;1 1/4;2;1 2. 1 1/3;2 1/2;3;1 1/5; 3 1/2 3. 1 2/3;2 1/3;4;1 4. 2;2 2/3;1 3/5;1 1/7; 4 1/2 5. 2;3;1 4/5;1 3/7;2 1/4

Page 35. 1. 2/7;2/5;6/5;8/3;4;4/5;4/7;5/8 2. 1/2; 1/3;3/5;1/4 3. 1/3;3/4;1/5;1/2;2/3 4. 1/2;1/4;2/3;3/4; 5/6 5. 1 1/3;1 1/2;2;1 3/10;1 3/8

Page 36. 1. 7 1/2;14;12 1/3;16;18 1/5 2. 38 1/2; 18 1/9;31 2/5;54 2/3;101 3/4 3. 1/2;1/4;1/3;2 1/2 4. 1/6;1/4;1/4;2 1/3 5. 1/3;1/3;1/5;1 1/2 6. 1/4;3/10;3/4; 4 3/6 7. 3/6;4/5;2/9;8 3/4 8. 2/6;3/6;5/6;3/8;7/8; 1/12;5/12;7/12

Page 37. 1. 1/8;1/6;1/8;1/4;4/9 2. 1/3;1/2;2/3;1/2 3. 2/3;1/3;1/2;3/4;1/3 4. 2 1/4;1/2;3/6 1/4;9 1/5 5. 1/2;4/5;8 3/4 6. 1/3;5/6;13 1/2 7. 5/8;3/4;2/3

Page 38. 1. 4 1/4;4 1/2;5/6 2. 4 3/8;7 1/3;6 1/8 3. 9 7/8;64 2/9;11 1/10 4. 2 3/8;12 1/8;102 5/12

Page 39. 1. 3 2/3;1 4/5;1/2 2. 4 2/3;8 3/5;6 1/2 3. 2/3;4/5;2 5/6 4. 1/8;1/4;4/5 5. 3 1/2 1/2 mi. 6. 4 1/2 in. 7. 2 1/2 lb.

Page 40. 1. Two 2. 4;3 3. eighth 4. divide 5. 4;3 6. 5 7. 2;10 8. 3;5;10 9. 1/2;1/4;1/3;1/2;1/3 10. 1;2 1/2;5; 2 1/7;5 1/3 11. 1 1/2;1/2;1/4;8 1/2 12. 1/2;3;8 1/2;3;1/2

Page 41. 1. 2 2. 4 3. 2 4. 4 5. 8 6. 2/4;2/8;4/8 7. 4/8; 2/2;4/4 8. 8/8;6/8;8/8

Page 42. 1. 1/2;1/2;2/3;1/2;3/4 2. 1/5;1/6;3/5;1/2; 4/5 3. 1/4;1/2;5/6;1/4;1/3 4. 1/8;3/8;3/4;1/2;5/8 5. 2 6. 3 7. 2 8. 3 9. 4/8;2/8;4/8;6/8 10. 6/12;8/12;9/12; 10/12 11. 3;6;4;6;3;6;20;2;6;21

Page 43. 1. 2/3;3/8;4/9;7/12 2. 1/2;5/9;7/10;7/8; 7/10 3. 7/9;5/8;9/10;11/12;9/10

Page 44. 1. 7/12;1 1/6;19/20;1 5/12 2. 13/14;1 1/15; 1 7/20;11/12 3. 17/20;1 13/20;31/35;1 1/12 4. 9/10;5/6; 1 3/20;1 5/8

Page 45. 1. 1/9;1/8;1/4;3/8 2. 1/2;1/8;3/10;1/3 3. 1/2;1/8;1/2;1/3 1. 1/3;1/2;1/4;7/8;2/3 2. 4 1/2;5;3 2/3;4 3/4;5 5/6 3. 8/12;9/12;10/12;3/12

Page 46. 2. 5/6 3. 3/4 4. 11/6 hr. 5. 5 6. 20 7. 15 1/4 lb. 8. 8 3/5 9. 6 10. 11 2/3 11. 6 8/9 12. 13 1/2 13. 1/3 14. 7/12 15. 8 3/4 16. 28 1/3 17. 11 19/24 18. 11 1/3 19. 8/12 20. 4 7/8

Page 47. 1. 12;3;60 2. 2;4;12 3. 7;4;60 4. 8;16;2 5. 24;2,000;12 6. 10;36;10 7. 4;40;8 8. 2;1;9 9. 6;2;3 10. 3;30;1 11. 2;9;3

Page 48. 1. 6:20;6:50;12:22 2. 8:52;4:30;2:35 3. 4 hr. 4. 3 hr. 5. 2 1/2 hr. 6. 2 1/2 hr. 7. 9:15;6:25;10:40;12:50;1:24

Page 49. 1. \$129.60 2. 16,000 3. 7,360 4. \$6.48 5. 60¢ 6. 30¢ 7. 15¢ 8. 90 bu. 9. 48;20,000 10. 2;500 11. 8;60 5/6 12. 1,500;540

Page 50. 1. 16 2. \$2.88 3. 10 qt. 4. 192 5. 8 qt.;4 qt.;32 qt. 6. 48 qt.;128 qt.;4 qt. 7. 3 qt.;4 bu.;40 qt. 8. 1/2 bu.;8 pt.;2 1/4 bu. 9. 32 10. 8 11. 4

Page 51. 1. 45 ft. 2. 30 ft. 3. 150 ft. 4. yes 5. 10 yards 6. 15 yd. 7. 50 yd. 8. 6;1:80 9. 27;2,640;32 10. 3/4;2/3;1/2 11. 72;18;8. 34 3/8;38 5/8;7 1/9;11/12

Page 52. 1. 4 in. 2. 6 in. 3. 360 ft. 4. 80 ft. 5. 122 ft. 6. 65 ft. 7. 23 rd. 8. 58 2/3 ft. 9. \$440 10. 83 ft.

Page 53. 2. 800 sq. ft. 3. 144 sq. in. 4. 75 sq. ft. 5. 14 sq. ft. 6. 48 sq. rd. 7. 12 sq. ft. 8. 9 sq. ft. 9. 600 sq. rd. 10. 460 sq. ft.

Page 54. 1. \$280 2. \$45 3. \$27 4. \$42 5. \$8.88 6. \$2.25 7. \$110 8. \$4.80

Page 55. 1. 6 ft. 5 in.;2 ft. 5 in.;6 ft. 11 in.;10 ft. 11 in. 2. 12 ft.;7 ft. 3 in.;3 ft. 8 in.;13 ft. 11 in. 3. 13 ft.;10 ft. 9 in.;16 ft.;19 ft. 10 in. 4. 1 ft. 1 in.;2 ft. 10 in.;5 ft. 7 in. 5. 5 ft. 9 in.;10 ft. 11 in.;6 in. 6. 2 ft. 2 in.;17 ft. 10 in.;5 in.

Page 56. 1. 12 2. 4 3. 24 4. 1/2 5. 8 6. 9 7. 2,000 8. 6 9. 8 10. 16 11. 75 sq. ft. 12. 40 ft. 13. 40¢ 14. 8 15. 27 1/3 yd. 16. \$134.80 17. 4 18. 14 ft. 2 in. 19. 6 ft. 9 in.

Page 57. 2. \$.05 3. \$.10 4. \$.25 5. \$.50 6. \$3.25 7. \$10.70 8. \$100.10 9. the cents point 10. \$54.80; \$5.04; \$144.36; \$3.20 11. Three dollars and seventy-one cents 12. Six dollars and ten cents 13. Ten dollars and forty-eight cents

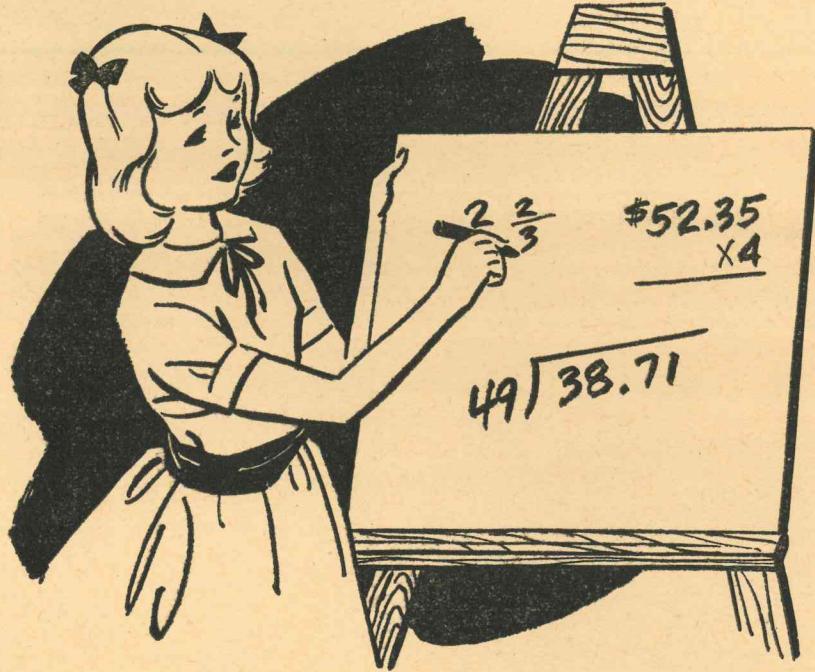
Page 58. 1. \$9.90 2. \$77.43 3. \$19.89 4. \$5.25 5. \$1.88 6. \$7.68 7. \$73.17 8. \$1.37 9. \$5.55 10. \$21.65

Page 59. 1. 62.3 mi. 2. 38.1 mi. 3. .7;8.5;5.9;6.1;4.5;5.8;12.7 4. .9;1.0;12.1;16.1;26.3;17.4;9.2 5. 14.2;70.3;89.9;132.2;89.2;47.0;439.9 6. .6 7. 6.9

Page 60. 1. .5;5;2.7;14;6;6;1.7 2. 1.6;30.4;9.5;4;2.9;9.1;28.2 3. 4.9;6.9;95.8;335.5;775.1;99.9;63.7 4. 5.2;75.3;86.5;89.8;554.4;471.7;82.6 5. 86.9;96.2;88.6;227.8;668.7;346.9;63.9 1. 6.9;15.1 2. 20.3;1.2 3. .7;60.8 4. nine tenths 5. three and one tenth; six and four tenths 6. seven and seven tenths; ten and six tenths

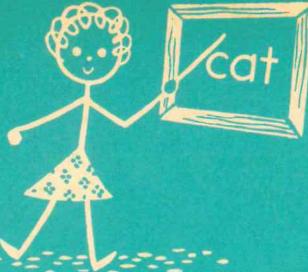
Page 61. 1. .06;27;.50;.95 2. 3.06;4.20;8.50 3. 25/100;.25 4. 10 4/100;10.04 5. yes 6. yes

Page 62. 1. \$28.07 2. 23.56 3. 4 7/10 4. 3.4 5. \$3.10 6. 1.31 in. 7. 8.9 in. 8. 9.54 9. \$2,677.50 10. 1.5 11. 99.2 12. \$24.50 13. \$5.10 14. 24.3 15. 105.3 16. 352.23 17. 207.14 18. 26.4 19. 13.90 20. 737.74





$$2+2=4$$



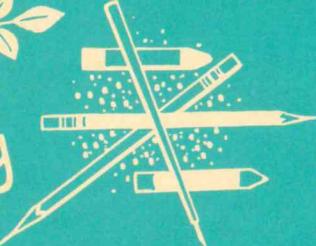
$$1+1=2$$



Arithmetic



Reading

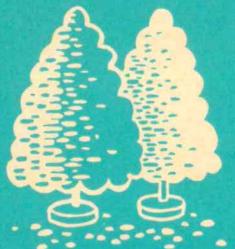


$$3+2=5$$

Spelling



Writing



$$1+1=2$$



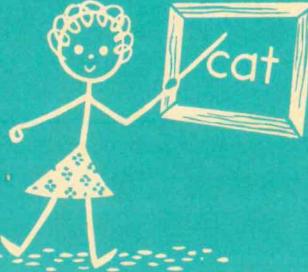
Arithmetic



$$3+2=5$$



$$2+2=4$$



$$1+1=2$$



Arithmetic



Reading

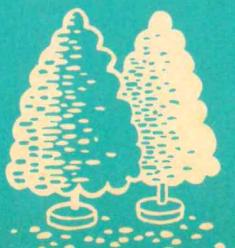


$$3+2=5$$

Spelling



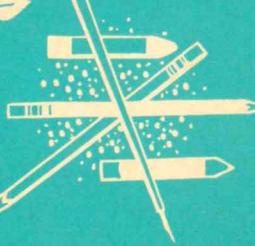
Writing



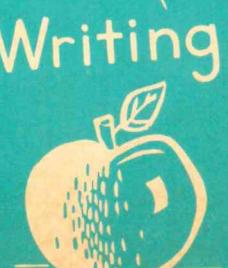
$$1+1=2$$



Arithmetic



$$3+2=5$$



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